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Demographic Changes and Pension Reform in the Republic of Korea

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Abstract

This paper conducted a quantitative assessment based on a simulation analysis of what impact the reformed Korean National Pension Act on July 2007 could bring on its sustainability, equity, and adequacy, and then it inquires into policy implications for further development of the system. Overall, the recent reform is regarded as positive in the sense that efforts to prepare preemptive measures were made concerning the coming era of population aging by the way of financial stabilization, consolidation of pensionable right, and system rationalization. But, at the same time, challenges that require additional security from efficiency and equity perspectives still remain. In this regard, this paper suggests future policy agendas for resolution as follows: First, setting up a clear target for financial stabilization, and gradual increase of contribution rate; Second, curbing pressure from increasing contribution rate through improvement on pension fund management system and its profitability; and third, emphasizing the urgent need to raise the current earnings ceiling and to establish a multi-pillar old age income security system by activating corporate retirement pensions, private pensions, and reverse mortgages.

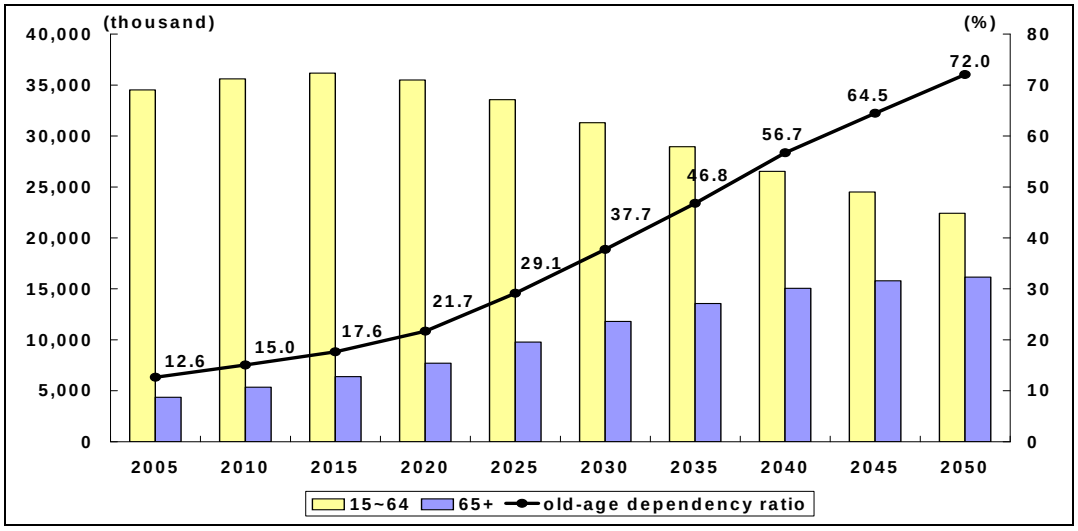
JEL Classification: H55

Contents

1. INTRODUCTION

The speed of demographic structural changes in the Republic of Korea (hereafter Korea) is almost threatening. The lengthening of the average lifespan and retirement of baby boomers are expected to quadruple the number of those over 65 years old from 9.1% in 2005 to 38.2% in 2050 (Korea National Statistical Office [KNSO] 2006). But, due to an unprecedented phenomenon of low birth rate, the ratio of the economically active population (aged 15–64) is forecasted to decrease by more than one-fourth from 71.7% to 53.0% for the same period. This means that the old dependency ratio is expected to rise by almost six times from 12.6% in 2005 to 72% in 2050 (Figure 1).

Figure 1: Demographic Changes in Korea: Forecasts



Source: KNSO (2006)

A rapidly aging population will make old age income security more important, while at the same time, significantly affecting public pension finance. In this regard, Korea now faces two major policy challenges—that of improving the old age income security system as soon as possible and, at the same time, improving the financial sustainability of the public pension system. These two policies, however, could potentially clash. For example, in the case of overemphasizing the function of public pension social insurance, a rapidly aging population could undermine the system's sustainability. On the other hand, if Korea focused mainly on stabilizing pension finance, its function for old age income security could weaken.

To accomplish these two policy goals, it would not be appropriate to depend on a single method, and efforts to develop various income sources for the elderly are needed. In other words, a more advanced old age income security system should be established by harmoniously developing various methods, such as national public pension, retirement pension at the corporate level, private pensions at the individual level, and savings for after retirement. It is also necessary to streamline the function of public pension adequately through the establishment of complementing systems and operating the system in a financially stable manner.

The National Pension Scheme, which serves as the backbone of Korea's public pension system, was first implemented in 1988. The scheme started to be extensively applied in 1999 to include self-employed people in urban areas, establishing a framework for the full-scale National Pension Scheme. Despite this external growth, however, the National Pension Scheme had a serious structural problem, specifically, on the imbalance between generous benefits and low contribution rates since its introduction.

To resolve this “low contribution-high benefit” discrepancy, the first amendment to the National Pension Act was done in 1998. At that time, the original revised bill included a decrease in the average income replacement rate for insured people with 40 years of coverage from 70% to 55%, extension of the age entitled to receive the first pension benefits to 65, and adoption of the actuarial valuation (conducted every five years, starting in 2003), while maintaining the basic framework of the previous unified pension scheme. However, as the bill went through a political decision process at the National Assembly, the proposed income replacement rate was adjusted to 60% from 55% and the overall contents failed to meet the original goal of the amendment.

As a result, according to the actuarial valuation conducted in 2003, which was done less than five years after the first revision, a pension deficit would occur by 2036, and the pension fund would completely be exhausted by 2047 (National Pension Development Committee [NPDC] 2003). Accordingly, the long-term financial instability of the National Pension Scheme became a serious issue again, damaging the confidence of pensioners on the government’s pension plan. To respond to the situation, the government submitted a second revised bill for the National Pension Scheme in 2003 containing measures to strengthen the financial stability of the fund and to ensure the substantiality of various systems, including the permanent establishment of a fund management committee. This bill, however, was not passed until July 2007, some four years after it had been presented to the National Assembly, with a somewhat reduced scale of changes from what had been originally submitted.

In this study, the expected effects and limitations of the second amendment to the National Pension Act are assessed and the political implications reviewed. To this end, various simulation methods have been used to quantitatively analyze the impact of the second amendment on the financial sustainability of the National Pension Scheme, intergenerational and intragenerational equity, and the scheme’s adequacy as an old age income source. Based on the results of my analyses, additional tasks for the sustainable and efficient development of the National Pension Scheme are suggested.

The contents of this study are as follows: Section 2 briefly summarizes the major contents of the amendment to the National Pension Act. Section 3 outlines the quantitative assessment of the effect of the revision through various simulation analyses. Based on the assessment results, Section 4 presents policy tasks that should be focused on for the improvement of the National Pension Scheme in the future. Finally, Section 5 concludes with a summary of major analysis results and policy implications.

2. MAJOR CONTENTS OF THE AMENDMENT TO THE NATIONAL PENSION ACT

Korea’s National Pension Scheme faces long-term financial instability and intergenerational inequity problems due to an imbalance in the benefit-contribution structure and a rapidly aging population. As a result, the need to reform the existing actuarial valuation process, which was first carried out in 2003, has emerged once again. To secure the financial stability and expand the coverage of the pension scheme, the government had long been pursuing another amendment to the National Pension Act since 2003. The National Assembly, however, did not pass the revised bill until July 2007.

The government’s second reform plan for the National Pension Scheme was composed of “parametric” reform measures that can alleviate the financial imbalance through an adjustment of benefit and contribution levels, while maintaining the structural framework of the existing scheme, much like the first reform. More specifically, the financial stabilization measures of the second amendment included a decrease in the benefit level based on average income earners with 40 years coverage from 60% to 50% by 2008, and then further

progressive decreases by 0.5 percentage points per year down to 40% in 2028, while maintaining the same 9% contribution rate. In addition, in a way to rationalize and complement the National Pension Scheme, the government also included the introduction of the Military Service Credit System, which was designed to grant six months' coverage to a person who has successfully finished his/her military service, and the Childbirth Credit System, designed to grant additional coverage to women who give birth to more than two children. The Deferred Pension System was drawn up to encourage the elderly to engage in income-earning activities. The other amendments include: (i) a decrease in benefit payment rates for each age group of early old age pensioners; (ii) an increase in the scale of the benefit cuts to prevent early retirement; (iii) an improvement of the Concurrent Benefits Adjustment System[1]; (iv) the prohibition of the seizure of paid pensions; (v) continuous payment of the Divided Pension, which is originally paid to a divorced spouse, even after a beneficiary remarries; and (vi) the expansion of the scope of beneficiaries for the Dependents' Pension. Table 1 summarizes the major contents of the amendment to the National Pension Act.

Table 1: Major Contents of the Amendment to the National Pension Act

Major Contents of the Amendment		Before Amendment	After Amendment
Long-term financial stabilization measures	Contribution rate	9% of average monthly income	same
	Income replacement rate	Average income replacement rate based on insured people with 40 years of coverage:* 1988–1997: 70% 1998–2007: 60%	2008: 50%; 2009–2028: Decrease by 0.5 percentage points per year; After 2028: 40%
Measures to rationalize and complement the National Pension Scheme	Abatement Old Age Pension	Additional 2.5% abatement rate applied to pensioners with less than 10–20 year coverage: 47.5% (2010)–92.5% (2019)	Abolishment of additional reduction rate: 50% (2010)–95% (2019)
	Early Old Age Pension	- Applicable 5 years before the normal benefit payment age, which is currently 55 - Decrease by 5% of the benefit amount per year for the period of early payment	Upward adjustment of the abatement rate per year for the duration of early payment (5 percentage points to 6 percentage points)

1 When a pensioner has the rights to two or more benefits, only one benefit is allowed at his/her choice. However, in case of a survivor pension, the amendment allowed a fixed amount to be added to the amount of the chosen pension.

Major Contents of the Amendment		Before Amendment	After Amendment
	Incentives for inducing early old age pensioners to engage in income-earning activities	- Suspension of benefit payment if beneficiaries engage in income-generating activities - Application of Early Old Age Pension to people aged over 60	- Suspension of benefit payment if pensioners generate income - Application of the Active Old Age Pension to workers aged 60 and above - Increase in benefit payment rate for the period of re-subscription (6% per year for the re-subscription period)
	Deferred Pension System	None	- Payment of increased benefit when beneficiaries, who reach the pension age, defer the receipt of pension - Additional rate: 0.5 percentage points per month (6 percentage points per year)
	Military Service Credit System	None	When a person has successfully finished his/her military service, an additional insured period (6 months) is granted to the person
	Childbirth Credit System	None	When a person gives birth to more than two children, an additional insured period (up to 50 months) is granted to one of the children's parents
Measures to expand the pension coverage	Introduction of Basic Old Age Pension System	None	- Expansion of the scope of beneficiaries: from 60% to 70% of the elderly population aged 65 and over - Increase in benefit rate: from 5% to 10% of average earnings of total national pensioners by 2028

Source: Press Release from the Ministry of Health & Welfare (2007)

* Based on the amount of monthly benefit in the first year of pension payment against the recalculated average lifelong earnings of middle-income earners

Together with these reform measures, the noncontributory Basic Old Age Pension Act was introduced to expand the pension coverage among elderly people with low incomes. Under this act, the benefit payment that comes to about 5% of the average monthly income (Value A) is provided for people aged over 65 with an income lower than the basic income determined by the Presidential Decree issued in January 2008. The benefit level, however, will be adjusted gradually from 5% of Value A to 10% by 2028, while the scope of its beneficiaries will be expanded from the current 60% of the people older than 65 (as of 1 July 2008 at its first benefit payment) to 70% by January 2009.

3. ASSESSMENT OF THE AMENDMENT TO THE NATIONAL PENSION ACT

As mentioned above, the amendment to the National Pension Act is highly likely to bring considerable change in the contribution-benefit structure of the National Pension Scheme as it contains a fairly large number of benefit cuts, an introduction to the Basic Old Age Pension System, and the rationalization of the related benefit level. To assess such effects of the revised act, a multifaceted review is necessary, one which covers the various aspects of both pension finance and the social security function. In this context, Section 3 shows the results of estimating the effects of the revision by analyzing the long-term sustainability of the National Pension Scheme, equity among different generations and income classes, adequacy of the benefit level, and responsiveness to changes in social environments.[2] In particular, in assessing the effects on each sector, various simulation methods have been used for quantitative analysis.

3.1 Sustainability

The purpose of the amendment to the National Pension Act is to obtain long-term financial stability of the National Pension Scheme in preparation for an aged society. Thus, it seems reasonable to prioritize the evaluation of how much the National Pension Act's amendment can contribute to the enhancement of the sustainability of the scheme. To analyze the impact of the amendment and to reflect the unique conditions of Korea's National Pension Scheme, this study used the long-term Actuarial Projection Model, a customized form of the World Bank's Pension Reform Options Software Toolkit (PROST) Model. Also, KNSO's population-related statistics were used as the basis for the analysis.[3]

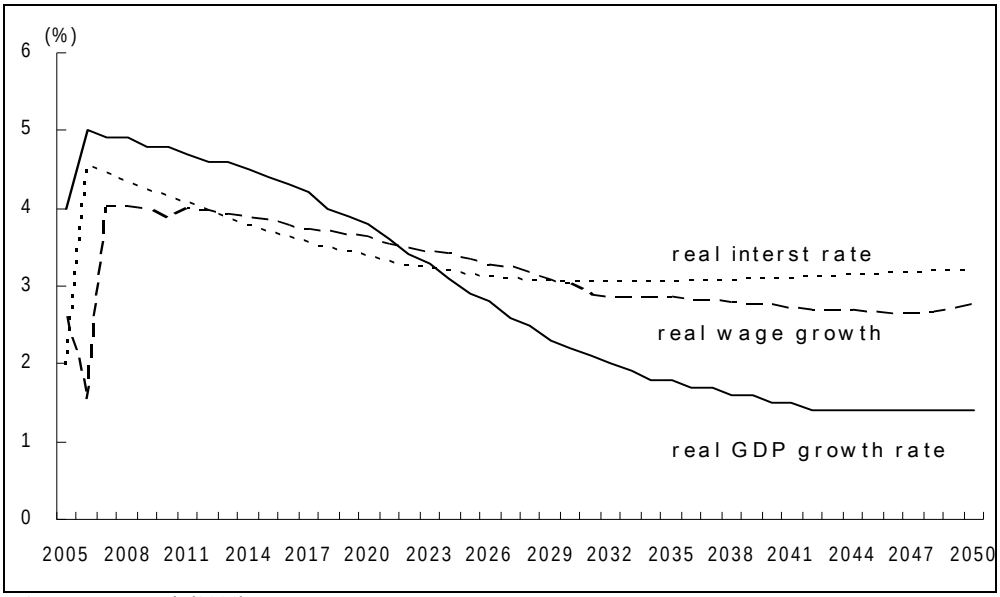
In this actuarial projection, the most important economic variables are the assumptions over the wage growth rate, the interest rate, and the economic growth rate. The assumed values should be set up in full consideration of the dynamic relationship among these variables because their relationship plays a pivotal role in the assessment of the cash-flow projection as well as the actuarial evaluation. In this study, actual data were used to analyze the period between 1988 and 2007, while assumed values for real economic growth rate, real wage growth rate, and real interest rate were used for the future period (up to 2050). These values were calculated based on the Growth Accounting Method presented in the study by Han et al. (2006).[4] Figure 2 presents the assumed values of such economic variables.

2 This study focuses on the assessment and analysis of financial stabilization measures among various reform measures for the National Pension Act. For more information about the assessment results of the improvement measures for the working elderly, including the introduction of Deferred Pension System and Early Old Age Pension System, refer to Moon and Lee (2007).

3 For more specific information on the actuarial evaluation process of the National Pension Scheme, refer to Moon and Shim (2005).

4 Due to the difference in assumed values, the actuarial projection result for the National Pension Scheme presented in this study could be different from that of existing studies or the National Pension Service's statistics.

Figure 2: Prospects for the Time Serial Changes in Major Economic Indices



Source: Han et al. (2006)

In long-term actuarial projections, it is necessary to differentiate the concepts of interest rate and rate of return on the pension fund to generate more accurate results. In fact, in a funded pension scheme, the pension fund's rate of return will have a direct impact on the pension finance, and the assumed value of the rate of return is not necessarily equal to the assumed interest rate value. That is, the return rate of the pension fund can be differentiated, depending on how efficient the fund management is or how strategically the assets are allocated. However, it is also difficult to make an assumption that there will be a constant gap between the return rate of the fund and the presumed interest rate. Therefore, this study has set an underlying assumption that the national pension fund's return rate is equal to the assumed value of the interest rate, following the universal rule. However, in the latter part of this study that covers policy discussions, different values were used to analyze the impact on the pension finance when the fund's rate of return is different from the assumed interest rate.

Under this assumption, Table 2 shows the results of comparing the financial prospects for the pension fund before and after the amendment of the National Pension Fund Act. As shown in Table 2, the instability of the pension finance is expected to be alleviated considerably in the long-term due to the second financial stabilization measures introduced in 2007. More specifically, with the stabilization measures implemented, the financial deficit of the pension fund is likely to occur in 2035, 10 years later than the previously expected point of time. Also, under the assumption that there will be no additional institutional changes, the point of time when the fund runs out of money will be postponed by 15 years from 2045 to 2060. Moreover, the ratio of fund reserve amount to gross domestic product (GDP) is likely to reach 46.2% by 2035, while the speed of decrease in the fund size is expected to slow down after the amendment.

Table 2: Comparison of Financial Prospects before and after the Amendment

(Unit: trillion KRW, %)

	Total Revenue		Total Expenditures		Account Balance		Reserve		Necessary Contribution Rate (%)	
	Before	After	Before	After	Before	After	Before	After	Before	After
2005	30.2 (3.5)	30.2 (3.5)	3.2 (0.4)	3.2 (0.4)	27.0 (3.1)	27.0 (3.1)	173.0 (20.1)	173.0 (20.1)	9.0	9.0
2010	50.7 (4.0)	50.7 (4.0)	8.1 (0.6)	7.6 (0.6)	42.6 (3.3)	43.1 (3.4)	353.7 (27.7)	357.3 (27.9)	9.0	9.0
2015	79.9 (4.3)	80.4 (4.3)	17.6 (1.0)	15.5 (0.8)	62.3 (3.4)	64.9 (3.5)	625.3 (33.8)	638.4 (34.5)	9.0	9.0
2020	117.1 (4.5)	119.1 (4.6)	39.3 (1.5)	30.5 (1.2)	77.8 (3.0)	88.6 (3.4)	988.8 (37.8)	1,031.9 (39.4)	9.0	9.0
2025	160.6 (4.5)	167.8 (4.7)	78.7 (2.2)	57.9 (1.6)	82.0 (2.3)	109.9 (3.1)	1,397.6 (39.2)	1,535.0 (43.1)	9.0	9.0
2030	206.2 (4.4)	225.5 (4.8)	143.2 (3.1)	101.3 (2.2)	63.0 (1.3)	124.2 (2.7)	1,761.8 (37.7)	2,124.1 (45.5)	9.0	9.0
2035	242.1 (4.1)	285.7 (4.8)	236.4 (4.0)	163.5 (2.7)	5.7 (0.1)	122.2 (2.1)	1,924.1 (32.3)	2,748.8 (46.2)	9.0	9.0
2040	259.9 (3.5)	348.3 (4.7)	376.9 (5.0)	258.1 (3.5)	-116.9 (-1.6)	90.2 (1.2)	1,619.6 (21.7)	3,298.9 (44.1)	9.0	9.0
2045	237.3 (2.6)	403.0 (4.3)	553.8 (6.0)	377.3 (4.1)	-316.5 (-3.4)	25.6 (0.3)	478.4 (5.1)	3,613.3 (38.9)	9.0	9.0
2050	234.4 (2.0)	443.6 (3.8)	772.8 (6.7)	524.9 (4.5)	-538.4 (-4.7)	-81.2 (-0.7)	-	3,488.9 (30.2)	29.7	9.0
2055	284.4 (2.0)	454.1 (3.2)	992.2 (6.9)	672.5 (4.7)	-707.8 (-4.9)	-218.4 (-1.5)	-	2,781.5 (19.4)	31.4	9.0
2060	346.4 (1.9)	424.5 (2.4)	1,295.8 (7.3)	876.6 (4.9)	-949.5 (-5.3)	-452.1 (-2.5)	-	1,131.2 (6.3)	33.7	9.0
2065	425.5 (1.9)	425.5 (1.9)	1,671.4 (7.5)	1,128.5 (5.1)	-1,246.0 (-5.6)	-703.0 (-3.2)	-	-	35.4	23.9
2070	525.1 (1.9)	525.1 (1.9)	2,101.1 (7.6)	1,415.3 (5.1)	-1,576.0 (-5.7)	-890.2 (-3.2)		-	36.0	24.3

Note: The values in parentheses are ratios to GDP.

Therefore, it is estimated that the amendment to the National Pension Act has considerably improved the sustainability of the pension finance through the decrease in benefit levels and significantly alleviated the structural imbalance between pension benefits and contributions at the same time. In particular, such a gradual decrease in the average income replacement rate based on insured people with 40 years of coverage by 20 percentage points (from 60% to 40%) is not only substantial, it is also meaningful that this adjustment has been applied at the *initial* stage of the system implementation. Nevertheless, the financial stabilization measures do not seem to be sufficient for fundamentally changing the "high benefit-low contribution" structure of the National Pension Scheme and achieving the actuarial balance of the pension fund. As shown in the projection results, the gap between pension benefits and contributions still remains despite a huge decrease in benefit expenditure in the long term (a 2.5 percentage point decrease against the projected GDP value in 2070).

As a result, it seems inevitable that the pension fund will be exhausted by 2060 if the current contribution rate stays at the same level. After that, the financial system will have to be

replaced by the pay-as-you-go (PAYG) system. In this case, however, the contribution burden on the workers of future generations will become much heavier. As shown in Table 2, the per capita contribution rate of economically active people after the conversion to the PAYG system is expected to surge from current 9% to 23.9% by 2065, and to 24.3% by 2070. That is, compared to the situation where the National Pension Scheme continues to have the current partially funded system, not only will the future workers have to bear the burden of over 1.5 times higher contribution payments (refer to Section 4 for more information), but also they will receive benefits far less valuable than the present value of what they have paid, which will inevitably cause an excessive income transfer from next generations to current generations in the future.

To analyze the role of the National Pension Act's second amendment in alleviating the fundamental imbalance of the pension scheme and its limitations, it seems more reasonable to conduct the actuarial valuation of the National Pension Scheme using a "closed measure." Table 3 and Figure 4 present the calculation results of the changes in the scale of total pension liability and total reserve for losses, using the "projected benefit obligation" (PBO) method. In Table 3, the "unfunded actuarial liability" (UAL) means the difference between total pension liability and actual fund reserve while the funding ratio is the ratio of fund reserve to the total pension liability. Therefore, in the case of using a fully funded pension scheme, the UAL value becomes zero (funding rate will be 1.0), while in the case of using the PAYG, the UAL value will be equal to the total reserve for loss.

Table 3: Actuarial Assessment before and after the Amendment to the National Pension Act (Unit: trillion KRW, %)

	Pension Reserve (A)		Total Pension Liability (B)		Unfunded Actuarial Liability (UAL) (B-A)		Funding Ratio	
	Before	After	Before	After	Before	After	Before	After
2005	173 (20.1)	173.0 (20.1)	451 (52.2)	323.2 (37.5)	278 (32.2)	150.1 (17.4)	38.4	53.5
2010	354 (27.7)	357.3 (27.9)	801 (62.7)	569.7 (44.6)	448 (35.0)	212.4 (16.6)	44.1	62.7
2015	625 (33.8)	638.4 (34.5)	1,320 (71.2)	928.6 (50.1)	694 (37.5)	290.1 (15.7)	47.4	68.8
2020	989 (37.8)	1,031.9 (39.4)	2,071 (79.1)	1,430.4 (54.6)	1,082 (41.3)	398.5 (15.2)	47.7	72.1
2025	1,398 (39.2	1,535.0 (43.1)	3,110 (87.3)	2,138.9 (60.0)	1,712 (48.1)	604.0 (17.0)	44.9	71.8
2030	1,762 (37.7)	2,124.1 (45.5)	4,221 (90.4)	2,891.7 (61.9)	2,459 (52.7)	767.6 (16.4)	41.7	73.5
2035	1,924 (32.3)	2,748.8 (46.2)	5,782 (97.2)	3,940.0 (66.2)	3,858 (64.8)	1,191.2 (20.0)	33.3	69.8
2040	1,620 (21.7)	3,298.9 (44.1)	7,846 (104.9)	5,342.5 (71.5)	6,226 (83.3)	2,043.7 (27.3)	20.6	61.7
2045	478 (5.1)	3,613.3 (38.9)	10,853 (116.7)	7,386.4 (79.4)	10,374 (111.6)	3,773.1 (40.6)	4.4	48.9
2050	-	3,488.9 (30.2)	14,504 (125.5)	9,865.3 (85.4)	14,504 (125.5)	6,376.4 (55.2)	-	35.4

	Pension Reserve (A)		Total Pension Liability (B)		Unfunded Actuarial Liability (UAL) (B-A)		Funding Ratio	
	Before	After	Before	After	Before	After	Before	After
2055	-	2,781.5 (19.4)	18,351 (127.8)	12,473.9 (86.8)	18,351 (127.8)	9,692.4 (67.5)	-	22.3
2060	-	1,131.2 (6.3)	23,645 (132.5)	16,050.8 (89.9)	23,645 (132.5)	14,919.6 (83.6)	-	7.2
2065	-	-	30,765 (138.7)	20,845.3 (94.0)	30,765 (138.7)	20,845.3 (94.0)	-	-
2070	-	-	39,550 (143.5)	26,754.1 (97.1)	39,550 (143.5)	26,754.1 (97.1)	-	-

As observed in Table 3, with the amendment to the National Pension Scheme, the size of UAL is expected to be reduced considerably from 278 trillion won in 2005 (pre-amendment period) to 150 trillion won (post-amendment period). The reason this UAL value decreases with the reform is because the PBO method considers the future subscription period of current pensioners in calculating the amount of total pension liability. That is, if the benefit rate for the future subscription period decreases with the amendment, the average payment rate over total subscription period will also decrease, which, in turn, will have an impact on the size of the past service liability. As a result, the funding rate is estimated to have increased from 38% before the amendment to 53.5% after the amendment, which will considerably improve the actuarial imbalance.

Despite such improvement, however, the ratio of the UAL to GDP is likely to increase continuously after 2030 and reach 100% around 2070. The funding ratio will also plunge after it reaches its peak rate—over 70%—by 2035. This implies that the actuarial imbalance of the National Pension Scheme still remains and it will actually be aggravated as the pension system enters a mature stage and population aging accelerates. Therefore, to strike a more fundamental financial balance for the National Pension Scheme, it seems necessary to make an upward adjustment of the current contribution level, or additional decrease in pension benefit within a short time frame.

The financial stabilization measures included in the revised bill for the National Pension Act, which was recently passed in the National Assembly, is different from what was originally submitted by the government in 2003, both in terms of pension benefit and contribution levels. Originally, the government planned to decrease the benefit level (average income replacement rate) from 60% to 50% and gradually increase the contribution rate from 9% to 15.9%, based on the results of the first actuarial valuation carried out in 2003. This conforms to the financial stabilization goal of keeping the reserve ratio of the pension fund at a level higher than 200% by 2070 (NPDC 2003).[5] Despite some criticisms over the stabilization goal itself, the original plan can be positively viewed as progress, in that it set a specific goal for financial stabilization, unlike the pension reform in 1998, and attempted to fundamentally adjust the imbalanced benefit-contribution structure.[6]

However, core contents of the government's original revised bill were drastically changed during the four years of adjustment process at the National Assembly. That is, while the average income replacement rate was reduced to 40% in the long term to complement the

5 Reserve ratio is defined as the ratio of fund reserve to the annual expenditure.

6 Refer to Moon (2005) for the critical assessment focusing on problems and limitations of the 2003 revised bill of the National Pension Act.

adoption of the Basic Old Age Pension System, the contribution level was determined to be maintained at the existing level, considering the possible opposition and resistance from participants. However, because this adjustment was the result of political compromise without a full reflection of the specific financial goals for the long-term stabilization of the pension finance, the adjustment caused a repeat of the stopgap situation where measures were taken only to respond to the problems rather than fix the source of the problems, just like during the process for the first amendment to the National Pension Act in 1998. In this context, it seems an objective assessment to say that the long-term financial stabilization measures under the second amendment were only half successful.

3.2 Equity

To evaluate the effect of the amendment to the National Pension Act in terms of equity, it would be useful to differentiate equity among different income classes and the equity among different generations, and then analyze specifically how much the amendment has affected the value of the benefit by income class and by generation. In this study, the changes in the benefit values by generation and by income class before and after the amendment have been compared through an actuarial simulation method. Following are the assumptions and major variables used in the simulation analysis.

3.2.1 Simulation Procedures

In this study, sample subscribers were classified by age group and income class. By age group, single male workers at ages 55, 40, and 25 as of 2008 were selected while each income class was composed of pensioners with incomes of 1/3, 1/2, and 2 times the basic income level, respectively. The basic income level was calculated based on the average income of economically active people by each age group and the average income was calculated based on the data from the 2005 Basic Statistical Survey of Benefit Structure (Ministry of Labor 2005). More specifically, each average income of male workers at age of 52, 37, and 22 were set as 3,096,366 KRW; 2,940,189 KRW; and 1,180,269 KRW, respectively. Also, it was presumed that all the workers started to subscribe to the National Pension Scheme at age 25 and would continue to work until they reach the entitlement age and can receive pension benefits without any withdrawal from the subscription in the middle of the subscription period.

In this analysis, calculation of the pension benefits amounts after the retirement of the sample subscribers required not only their annual earnings level but also an assumption of the change in their income level as they grew older. That is, to draw up an “age-earnings profile” over the entire working period for each worker, additional assumptions are necessary for the “general rate of promotion” reflecting the increase in age and working period as well as the average wage growth rate. In this study, the general rate of promotion was calculated based on the “curve-fitting” value of the average income distribution in the statistical data of the Ministry of Labor. Then, the calculated rate has been equally applied to all age groups under the assumption that the distribution pattern will remain constant in the future. However, since the objects in this analysis were presumed to work continuously until they start to receive pension benefits, it has also been assumed that there will be no changes in the income level after they reach 50 in the virtual age-earning profile.[7]

Furthermore, it was necessary to adjust the contribution and benefit levels of each generation using the “death rate by age” as a weight, in order to estimate the size of the expected benefit value. However, due to limited data on the survival probability of each generation for this study, the benefit value was calculated based on the expected years of life, presuming that each pensioner lives until 55, which is the entitlement age for the current

7 For more in-depth information about the analysis procedures, refer to Moon and Lee (2007).

Early Old Age Pension. The expected years of life were calculated based on the KNSO's 2005 Complete Life-Table (by generation). The calculation result shows that the life expectancy of male workers aged 55 as of 2008 is 78.5, while those aged 40 and 25 as of 2008 are 80.5 and 82.5, respectively, revealing a continuous increase in the pensionable service period over time.

As for the institutional variables, the effect of the amendment to the National Pension Act has been analyzed through a comparison between the periods before and after the amendment in July 2007. For this analysis, it has also been reflected that the starting age eligible to receive the benefit of the Basic Old Age Pension will gradually go up from the current 60 to 65 by 2033. In calculating the pension benefit level by each pensioner, the function of income redistribution of the national pension should be considered. That is, because the current scheme is composed equally of the "earnings-related portion" which is based on the recalculated average life-time earnings (Value B) of individual pensioners and the "fixed portion" estimated based on the average earnings of the last three years during the pensionable service period (Value A), an assumption for calculating Value A is also necessary. Therefore, it has been assumed in this study that Value A increases in accordance with the real wage growth rate of each year from 1,412,428 KRW, the actual average earnings value in 2005.

In the application of contribution value, it has been assumed that workers pay the total amount of the contribution because the employers' share of the contribution payment will ultimately be transferred to workers through a decrease in the amount of real wage. The contribution rate has been assumed to be 3% by 1992 after the introduction of the National Pension Scheme, 6% between 1993 and 1997, and 9% after 1998. Also, as for the values of real wage growth rate and real interest rate, which are playing a critical role in the actuarial profitability assessment, the same values used in the previous actuarial projection have been used in this analysis as well. Finally, all the price variables used in this analysis are based on the constant price in 2005.

3.2.2 Results

Table 4 demonstrates the major indices that show the changes in benefit values before and after the amendment to the National Pension Act, analyzed through a simulation under the above assumptions and conditions. The equity effect of the amendment could be analyzed by calculating the difference in the net value of pension benefits by each age group and income class between pre- and post-implementation periods. Table 4 presents the internal rate of return (IRR) and "benefit-to-contribution ratio"; i.e., the ratio of the present value of the expected pension benefits to total contribution payment, which is the basis of the calculation.

Table 4: Changes in the Benefit Level before and after the Amendment

(Unit: 1,000 KRW, times, %)

a. Single male workers aged 55 as of 2008

Income Level	1/3 of the Level of Average Income Earners		1/2 of the Level of Average Income Earners		Average Income Earners		Twice as Much as the Level of Average Income Earners	
	Before	After	Before	After	Before	After	Before	After
Pension Benefits (B)	694	666	828	794	1,230	1,180	1,375	1,318
Average Lifetime Income (y)	1,377	1,377	2,065	2,065	4,130	4,130	8,713	8,713
Income Replacement Rate (B/y)	50.38	48.37	40.09	38.46	29.79	28.56	15.79	15.13
Benefit/Contribution Ratio (After/Before Ratio)	3.35	3.22 (96.1)	2.67	2.56 (95.9)	1.98	1.90 (96.0)	1.89	1.82 (96.3)
Internal Rate of Return (IRR)	10.59	10.37	9.34	9.11	7.71	7.48	7.46	7.23

b. Single male workers aged 40 as of 2008

Income Level	1/3 of the Level of Average Income Earners		1/2 of the Level of Average Income Earners		Average Income Earners		Twice as Much as the Level of Average Income Earners	
	Before	After	Before	After	Before	After	Before	After
Pension Benefits (B)	1,744	1,473	2,075	1,751	3,069	2,586	3,696	3,112
Average Lifetime Income (y)	2,266	2,266	3,399	3,399	6,799	6,799	14,790	14,790
Income Replacement Rate (B/y)	76.94	64.98	61.04	51.51	45.15	38.04	24.99	21.04
Benefit/Contribution Ratio (After/Before Ratio)	3.03	2.56 (84.5)	2.41	2.03 (84.2)	1.78	1.50 (84.3)	1.64	1.38 (84.1)
IRR	7.70	7.06	6.82	6.17	5.66	4.99	5.30	4.65

c. Single male workers aged 25 as of 2008

Income Level	1/3 of the Level of Average Income Earners		1/2 of the Level of Average Income Earners		Same as the Level of Average Income Earners		Twice as Much as the Level of Average Income Earners	
	Before	After	Before	After	Before	After	Before	After
Pension Benefits (B)	2,711	1,926	3,250	2,309	4,868	3,458	5,784	4,109
Average Lifetime Income (y)	3,595	3,595	5,393	5,393	10,786	10,786	23,532	23,532
Income Replacement Rate (B/y)	75.40	53.57	60.27	42.81	45.13	32.06	24.58	17.46
Benefit/Contribution Ratio	2.73	1.94	2.18	1.55	1.64	1.16	1.51	1.08
(After/Before Ratio)		(71.1)		(71.1)		(70.7)		(71.5)
IRR	6.98	5.75	6.18	4.93	5.12	3.85	4.77	3.55

3.2.2.1 Intragenerational Equity

First, in terms of the benefit-to-contribution ratio, there is a big difference in the net pension values of the old National Pension Scheme among different income classes, reflecting the income redistribution effect of the "fixed portion" of the scheme. For example, in the case of workers aged 55 years as of 2008, the total benefit of average income earners is expected to be about twice the amount of their total contribution payment for 21 years based on the present value, implying that the existing National Pension Scheme has a serious imbalance between "high benefit and low contribution." Meanwhile, the benefit-to-contribution ratio of the workers with 1/3 of the average income level is 3.4, meaning that the lower the income, the bigger the gap between the present values of contribution and benefit.[8]

In Table 4, the benefit-to-contribution ratio of the workers who earn twice as much as average workers is not much lower than that of the average income earners, because there is a ceiling on the pensionable income (currently 3.6 million KRW). Nevertheless, in the case of the workers aged 55 as of 2008, the first generation of the National Pension Scheme, the benefit-to-contribution ratio for the high-income class is about 1.9, much higher than the actuarial balance level, where the benefit-to-contribution ratio is 1.0. This structural imbalance is also revealed in the calculation result of internal rate of return. For example, in the case of the 55-year-old age group, the real IRR of the income class with one-half of the average income level, which is similar to middle-income subscribers in the National Pension Scheme, is estimated to be over 9%. This is more than twice the level of the real interest rate or the real rate of return on the Pension Fund, meaning that the benefit level for the early generation of the scheme is relatively too high in terms of actuarial value.

In this second amendment to the National Pension Act, as a downward adjustment has been uniformly applied to all benefit levels, the cutting ratios in different income classes are almost proportional. Therefore, it seems possible to assess the impact of the amendment on the equity among different income classes as "relatively neutral." Such proportional effect of the benefit cut is also observed in the 40-year-old age group and 25-year-old age group. However, considering the fact that the newly introduced Basic Old Age Pension benefit will be paid to elderly people who fall in the lowest six income deciles, the overall income redistribution capacity of the National Pension Scheme could be strengthened further.

8 In this simulation, the income level of average workers is a little above twice the level of Value A. Therefore, in terms of income level, the middle-income subscribers of the National Pension Scheme are similar to those who earn half the level of average workers' income.

Despite the benefit cuts, the benefit-to-contribution ratio of workers aged 55 is still very high in every income class. This is so because, in the context of protecting the vested interests of existing pensioners, the benefit level under the old act will be guaranteed for the previous subscription period and the decrease in pension benefits will occur gradually over a long period of time. Therefore, in the case of workers aged 55 as of 2008, the benefit-to-contribution ratio is likely to fall only by about 4% in all income classes. However, the decrease in benefit-to-contribution ratios is expected to grow bigger for the future generations.

3.2.2.2 Intergenerational Equity

The gap of net pension benefit values among different generations under the National Pension Scheme and the effect of the amendment to the National Pension Act could be assessed through a comparison of benefit-to-contribution ratios and IRR among different age groups. Table 4 shows the benefit-to-contribution ratios and IRR of three age groups: 55, 40, and 25. Under the existing pension scheme, these two values seem to decrease further with future generations due to the first reform measure to cut the benefits in 1998. However, as seen in Table 4, the benefit-to-cost ratio of the national pension is above 1.0 in every age group and income class, implying that the net pension benefit is applied to all of the current pensioners. In other words, the old National Pension Scheme contained a very serious problem of a structural imbalance.

The second amendment to the National Pension Act is expected to cause a considerable change in the benefit level by each age group. As presented in Table 4, the extent of decrease in the benefit-to-contribution ratio of workers aged 55 as of 2008 is only 4% for each income class, while that of workers aged 40 and 25 is about 16% and 29%, respectively. As a result, the gap of benefit-to-contribution ratios between average income earners aged 55 and those aged 25 increased from 17.2% (1.98 and 1.64 for age group 55 and 25, respectively) before the amendment to 38.8% (1.90 and 1.16 for age group 55 and 25, respectively) after the amendment. This is, of course, due to the effect of benefit cuts under the amendment occurring slowly, which in turn, is the result of grandfathering over the past subscription period and a gradual decrease in the level of future benefits.

As noted above, the study suggests that the gap of net pension benefits among different age groups gets wider with the amendment to the National Pension Act. However, this should not be interpreted that the amendment has a negative impact on intergenerational equity. As presented above, under the existing scheme, the conversion to PAYG system will inevitably increase the contribution rates of future generations to over 30%. However, it is important to note that the second amendment to the act cuts the net pension benefits of early generations, thereby lessening the burden of contribution payment for future generations. That is, since such a result inevitably occurs during the accrual period due to the grandfathering measure, from a long-term perspective, the amendment to the National Pension Act will have to be assessed to have enhanced the intergenerational equity by alleviating the structural imbalance of the National Pension Scheme.

Meanwhile, the benefit-to-contribution ratios of all age groups and income classes exceed the system balance level (1.0) even after the amendment to the National Pension Act, which indicates that all of the current pensioners are likely to receive considerable net pension benefits. Of course, there is a possibility that the benefit-to-contribution ratios of some high-income earners will fall below 1.0, in case the objects of actuarial projection include more generations in the future. However, even considering this, the structural imbalance of the National Pension Scheme will continue to exist after the amendment. Therefore, additional measures to rectify remaining structural imbalance should be followed to improve intergenerational equity. In particular, additional increase in pension contribution should be promptly applied for the enhancement of financial stabilization and equity among different generations.

3.2.2.3 Adequacy

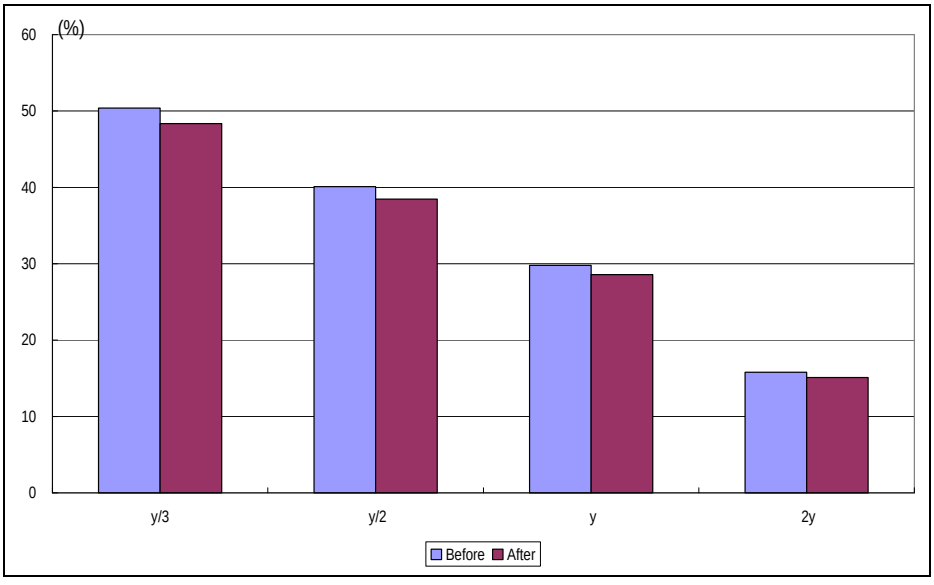
Adequacy is an assessment standard used to estimate whether the revised National Pension Scheme will play a sufficient role in terms of old age income security. However, the adequacy of such old age income replacement level should be judged in consideration not only of the single-layered National Pension Scheme but also of the multilayered other pension plans including retirement pension at the company level, private pension at the individual level, and savings for old age. Also, the replacement level of proper old age income will differ depending on the type of family, health status, or whether or not there are any other income sources for the pensioners. Therefore, it is difficult to suggest an absolute assessment standard to evaluate the adequacy of the National Pension Scheme. The adequacy level should be assessed indirectly by calculating how the income replacement rate of the National Pension Scheme has changed before and after the amendment.

Figure 3 shows the extent of changes in the income replacement rate of the pension benefit against the reestimated average lifetime earning during the working period of each pensioner in accordance with the amendment to the National Pension Act. As presented in Figure 3, the scale of decrease in the income replacement rate caused by the amendment is small for workers aged 55 who have a relatively longer subscription period, and the extent of decrease grows bigger with future generations. In particular, the income replacement rate of those aged 25 decreases by almost 30% in every income class after the amendment to the Act, which suggests that its function of serving as an old age income source will be weakened over time.

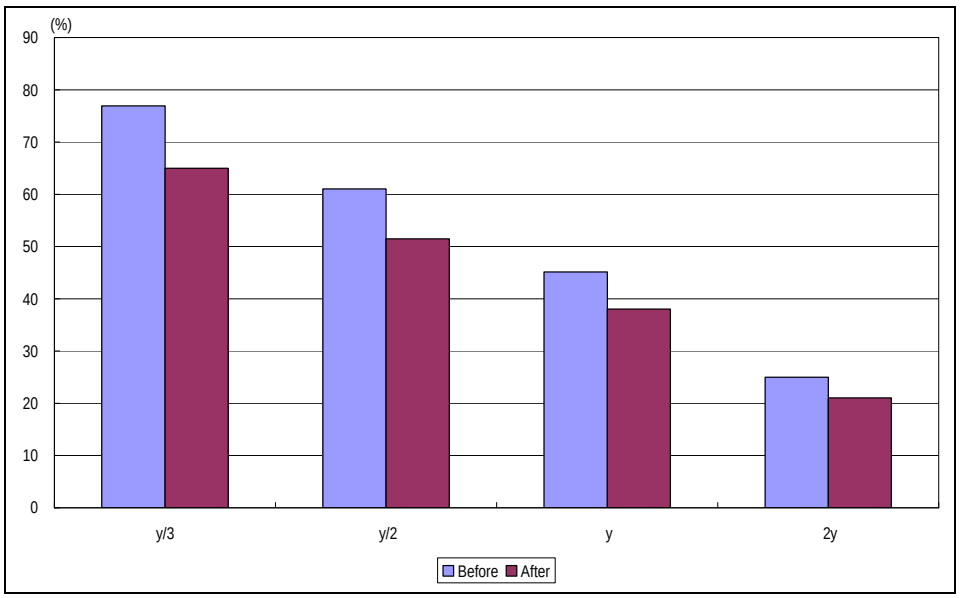
Of course, the old age income security level of the National Pension Scheme differentiates among each income class. In the case of the y/2 group, which is the equivalent of the medium-income subscribers of the National Pension, the income replacement rate is expected to remain over 40% in the long term even after the amendment to the National Pension Act, and it is likely to play an important role of social insurance. Also, its effect of old age income security is clearer for the low-income class (y/3), due to its income redistribution function. However, in the case of average income earners, the income replacement rate after the amendment will remain a little above 30% in the long term, even though they work during the entire subscription period. In particular, the income replacement rate of high-income earners (2y) seems to decrease to around 17% in the long term.

Figure 3: Change in Income Replacement Rates before and after the Amendment

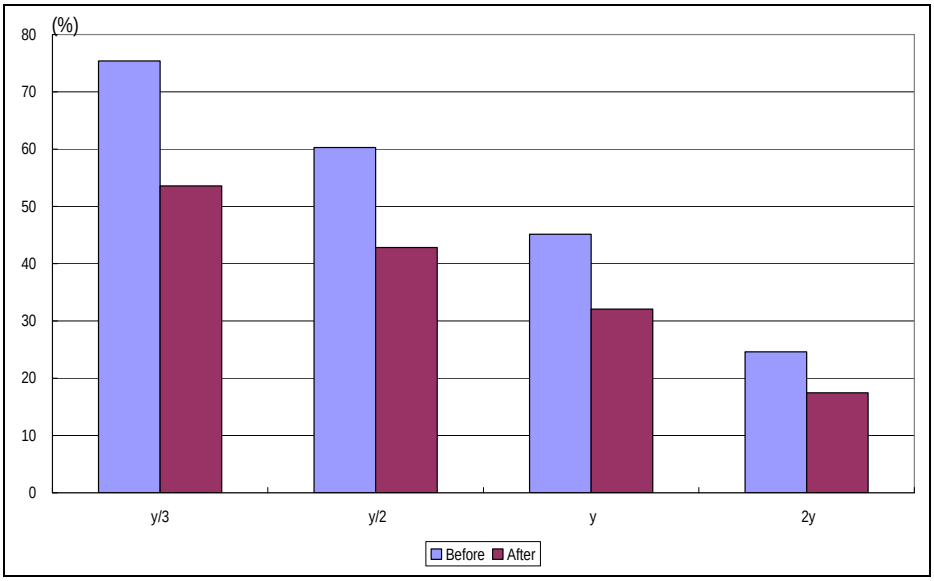
a. Workers aged 55



b. Workers aged 40



c. Workers aged 25



That is, although the pension fund serves as an old age income source to a certain extent despite the cut in pension benefits, its capacity to provide old age income security seems to be weakened for average and higher income earners. Therefore, to complement such a function, it will be necessary to discover various sources of old age income for the mid-to-high-income classes.

The remarkable decrease in the income replacement rate of high-income earners (2y) in Figure 3 is due to the application of the earnings ceiling for the pensionable income and the income redistribution effect of the National Pension Scheme. That is, under the current scheme, earnings exceeding 3.6 million KRW will be excluded from the objects of both contributions and benefits, and therefore, the replacement rate of high income earners, whose income levels are higher than the earnings ceiling, will decrease further. However, despite the increase in the real income and price level, the upper earnings limit has been fixed at its nominal value (3.6 million KRW) for the past 20 years, since the National Pension Scheme was first introduced in 1988. For this reason, the present value of the current

earnings ceiling is about 120% of the average income level, resulting in restrictions on additional opportunities for applying the national pension scheme to a large number of mid-to-high income earners. In particular, since the role of old age income security for relatively higher income earners is likely to be weakened with the benefit cuts, it seems inevitable to readjust the earnings ceiling to a more reasonable level and expand the function of social insurance.

4. FUTURE POLICY DIRECTION

So far, the major contents of the amendment to the National Pension Act implemented in July 2007 and its expected effects have been reviewed and assessed in various aspects. Overall, the second amendment could be positively assessed, in that it sought a preemptive response to the upcoming aged society by considering various measures to stabilize the pension finance, to reinforce the vesting rights, and to rationalize the relevant institutions. At the same time, however, there are issues that should be additionally resolved and complemented from economic and welfare perspectives. In particular, the amendment has its limitations when it comes to resolving the structural imbalance of the National Pension Scheme, although it has made a remarkable contribution to the sustainability of the pension finance and equity of the scheme. Moreover, the huge benefit cuts will inevitably reduce its role as old age income security. In this section, policy directions that should be pursued in the future will be discussed based on the assessment result of the amendment to the National Pension Act.

4.1 Establishment of a Financial Stabilization Goal

As observed above, the financial instability and intergenerational inequity problems of the National Pension Scheme were caused by the internal structural imbalance between contribution and benefit, combined with the external factor of a rapidly aging population. In truth, if not for such fast demographical changes, the problem of equity among different generations or sustainability caused by differences in pension financing methods such as PAYG or a funded system could be markedly alleviated. However, with such drastic changes in population structure as are actually occurring in reality, the best alternative to enhance the sustainability of the pension finance and intergenerational equity would be maintaining a financing method based on the funded system for as long as possible (Moon 2005).

In the discussion of reform measures to stabilize the finances of the National Pension Scheme, top priority must be placed on the clear set-up of the purpose of the reform, which is directly related to the matter of social choice about which financing system should be applied to the National Pension Scheme. If the government decides to keep the partially funded pension scheme in an effort to respond to a rapidly aging population and to secure the sustainability of the National Pension Fund, the action plan for the reform will have to be prepared in a rational and concrete way to achieve such a goal. In this regard, the contents of the amendment to the National Pension Act in 2007 seem to have limitations both in terms of policy goal and policy means.

Despite considerable cuts in pension benefits under the revised act, the innate problem of the National Pension Scheme, such as the structural imbalance, was not solved fundamentally because the reform measures to improve financial stability have been coordinated without any principles or specific financial goals. Moreover, the original financial stabilization goal suggested by the NPDC in 2003 has been damaged and reduced during the process of political discussions, which is very regretful. Therefore, in future efforts to pursue reforms to stabilize the National Pension Scheme's finances, in-depth discussions over which financing method should be maintained or what should be the specific goals to achieve financial stabilization are necessary before any attempts are made to adjust pension benefit or contribution levels.

4.2 Rectification of Structural Imbalance

As presented above, the structural imbalance of the National Pension Scheme has not been fully resolved even after the amendment to the National Pension Act in 2007, which implies that the pension finance still contains problems of long-term instability and intergenerational inequity in terms of net pension benefits. Therefore, the major task for improving the sustainability and equity of the National Pension Scheme will have to be the resolution of this fundamental imbalance issue, which requires the readjustment of the current contribution and benefit level. The sooner such restructuring occurs, the quicker financial soundness can be achieved and the alleviation of the contribution burden of future generations will be addressed.

4.2.1 Contribution Adjustment

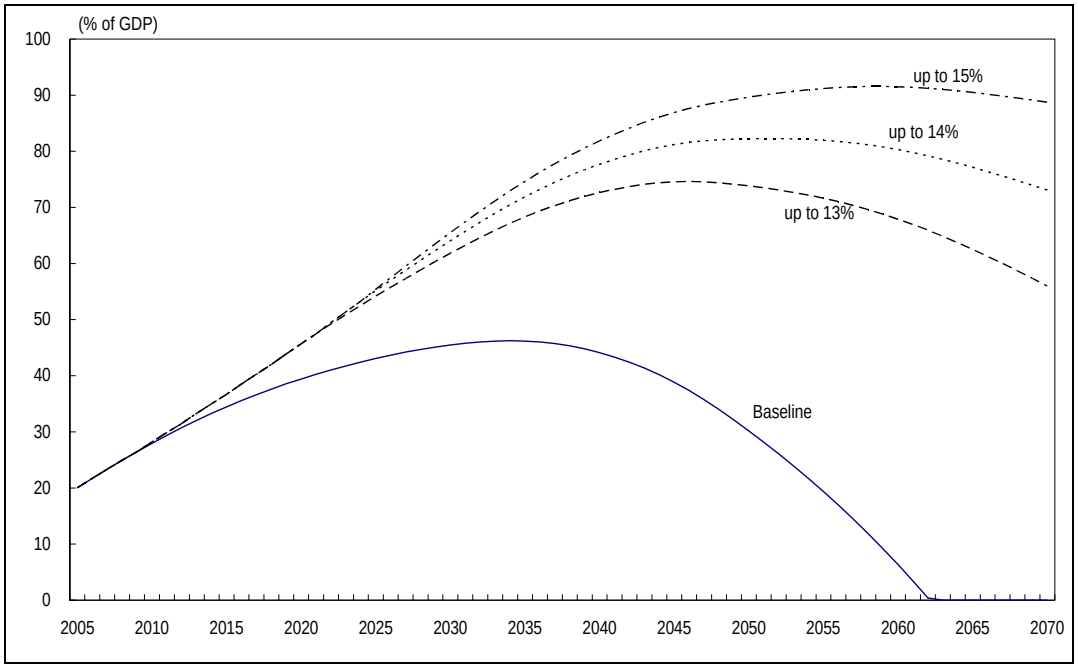
With the amendment to the National Pension Act, the income replacement rate of the pension scheme for mid-to-high income earners will fall below 30% level even for pensioners with 40 years of coverage. For this reason, there will be limitations on further benefit cuts in the future on a uniform basis. Therefore, to come up with additional measures to stabilize the pension finance, a top priority will have to be put on raising the level of contribution rate.

The improvement measures suggested by the government in 2003 focused on maintaining the partially funded system by 2070, with a decrease in the income replacement rate by 10% (from 60% to 50%) and a gradual increase in the contribution rate to 15.9%. If this financial stabilization goal is applied as it is and the income replacement rate is reduced to 40% as suggested in the latest revised bill, it is estimated that the contribution rate should be raised to 12.9% (NPDC 2003). However, the level of contribution increase does not seem to be sufficient to achieve a structural balance of the system in the long-term.

With such a contribution level, the timing of fund exhaustion might be delayed until 2070. After that, however, it will be inevitable to convert to the PAYG system, and the required contribution rate to maintain the National Pension Scheme will rise above 24% (refer to Table 3). Therefore, the only solution to prevent such a condition would be to maintain the partially-funded pension scheme, under which, the higher the funding rate, the lower the burden of future generations over contribution payment (Moon 2005). In other words, a prompt increase in the current contribution level and a decrease in excessive net pension benefits would be a feasible solution to promote the sustainability of the National Pension Scheme and to reduce excessive income transfer from next generations to current generations.

The level of increase in contribution rate and the speed of the adjustment should be determined based on the specific goals to achieve the financial stability mentioned above. If the partially-funded pension scheme should be maintained in the future, the contribution rate will also have to be adjusted in accordance with the plan and, in that case, a considerable increase in the contribution rate will be inevitable. Figure 4 presents the results of a simulation analysis over the extent of changes in the amount of pension reserve, in case the contribution rate goes up by 1.0 percentage points every three years from 2010. As illustrated in Figure 4, to keep the funding ratio at a stable level from a long-term perspective while maintaining the current benefit system, it is estimated that the contribution rate should go up to 15% level. If the timing and speed of contribution rate adjustment are delayed and slowed down further, the scale of increase in contribution rate will increase more, which will require a bolder decision during future reforms.

Figure 4: Effect of Increase in the Contribution Level (increase of 1.0 percentage points every three years from 2010)



4.2.2 Benefit Adjustment

As pointed out above, without securing other complementary old age income sources in the future, it seems difficult to apply additional cuts in the pension benefit level. However, to restrict the scale of contribution increase to strike a financial balance for the National Pension Scheme, a continuous review will be necessary not only for such a uniform decrease in pension benefits but also for the measures to decrease the burden of benefit payment. In this context, other alternatives could include: (i) measures to speed up the scheduled decrease in the future; and (ii) introduction of a built-in stabilizer that allows automatic adjustment of the benefit level reflecting a demographic factor, in response to population aging.

According to the contents of the amendment to the National Pension Act in 2007, the benefit level (income replacement rate for insured people with 40-year coverage) will decrease by 10% (from 60% to 50%) in 2008, and then continue to go down by 0.5 percentage points per year from 2009 until it reaches 40% by 2028. This gradual decline in the benefit level has been designed to alleviate as much impact as possible from a sudden decrease in pension benefits and to have enough time until other measures to secure old age income such as private retirement pensions or personal pensions are activated (Ministry of Health and Welfare 2007). However, if the speed of benefit cuts is too slow, the net pension benefits for early generations of the National Pension Scheme will continue to remain, and the financial burden of future generations will become heavier. Also, even if a lump sum decrease in pension benefits is applied immediately, the actual effect of benefit cuts will appear slowly due to the grandfathering measure. Considering this, a decision to gradually decrease the pension benefits over the next 20 years seems to have reflected the relevant political interests, focusing only on the benefit to present generations. Therefore, it is critical to come up with measures to accelerate the speed of downward adjustment of the benefit level as much as possible, in the process of drawing up additional financial stabilization measures in the future.

One of the alternatives worth considering instead of decreasing pension benefits might be the introduction of an automatic balance mechanism recently adopted and implemented in

some advanced countries including Sweden, Germany, and Japan.[9] All of these countries have introduced the automatic balance mechanism, which allows automatic downward adjustments of the benefit level reflecting the speed of extension in people's life expectancy, in an effort to overcome the financial crisis of their public pension systems caused by rapid population aging. This mechanism not only alleviates the pressure of further contribution increases or financial instability caused by longer life spans, but also contributes to the improvement of intergenerational equity through actuarial adjustments of pension benefits, reflecting a demographic variable in accordance with the increase in life expectancy. In particular, considering the fact that Korea is facing a serious problem of population aging that is progressing at an unprecedented speed, it seems desirable to think more actively about the introduction of an automatic balance mechanism.

4.3 Efficient Management of the Pension Fund

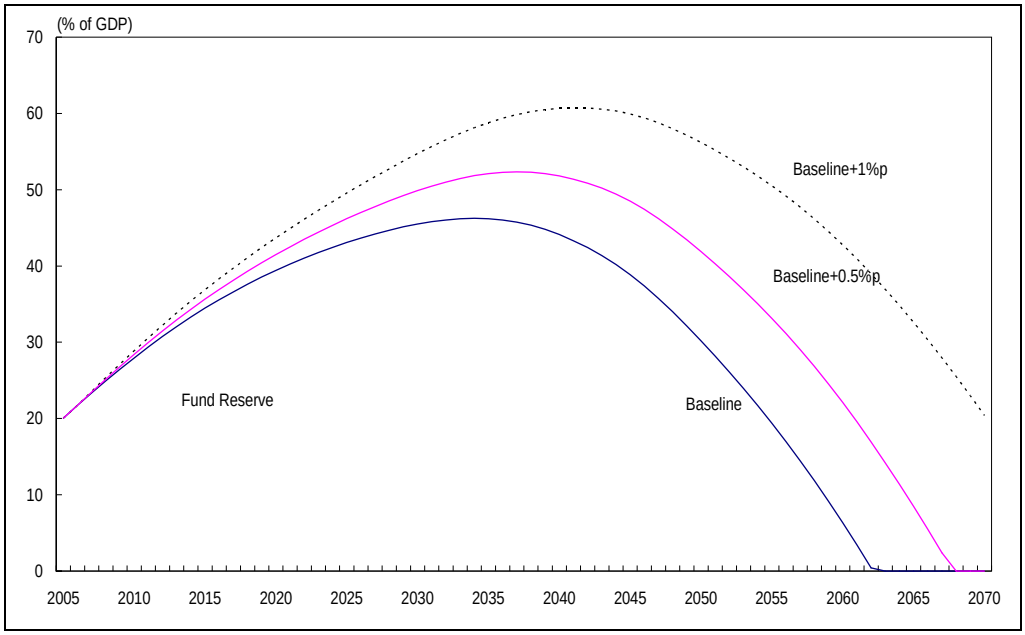
In operating a partially-funded pension system such as the National Pension Scheme, the efficiency of pension reserve management plays a critical role in maintaining the financial soundness of the system. Under the Defined Benefit System, the amount of benefit payment calculated through a pension formula is funded by the pension contributions collected from pensioners and investment profits of the pension fund. As a result, the lower the rate of return on the pension fund, the higher the pressure of increase in the contribution level. Therefore, the imbalanced structure of the National Pension Scheme is closely related to the pension fund's rate of return. In addition, since the funding rate of the national pension is expected to increase considerably with the amendment to the Act (see Table 3), the enhancement of the profitability of the pension fund management has become relatively more important.

The impact of the improvement in the rate of return on pension finance has been more clearly exposed in Figure 5, which demonstrates the simulation result. As observed in Figure 5, if the real rate of return on the pension fund increases by 0.5 percentage points every year compared to the presumed real interest rate, the exhaustion of the National Pension Fund is likely to be postponed by more than five years. If the gap between real rate of return and real interest is widened to 1.0 percentage points per year, the partially funded pension scheme will possibly be maintained by 2070 without additional adjustments over the pension benefit or contribution levels under the current system.

As such, not only will the enhancement of the pension fund's rate of return play a pivotal role in promoting the sustainability of the pension finance but also it will have a huge impact on determining the contribution rate for future generations. To assess the impact of changes in fund investment profitability on the contribution burden of future generations in a more quantitative way, a simulation analysis has been conducted to find out how much increase from the current contribution rate (9%) is necessary to generate the similar financial effect caused by the changes in the real rate of return on the pension fund presented in Figure 5.

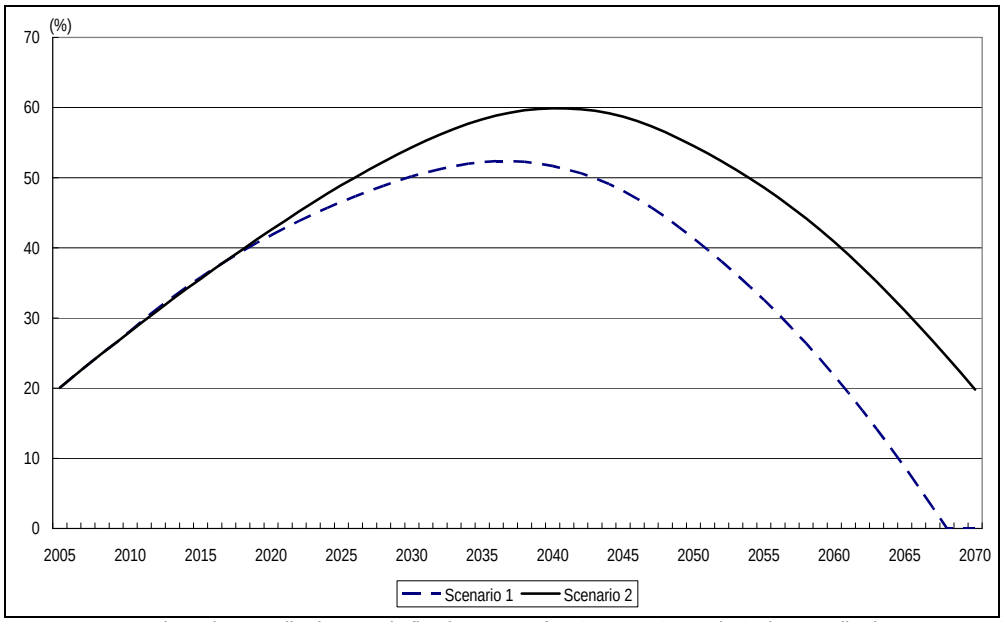
9 Refer to Kim (2007) for the review on the specific measures to introduce automatic balance mechanism.

Figure 5: Changes in the Amount of Fund Reserve with Different Rate of Return



As presented in Figure 6, a 0.5 percentage point increase in the rate of return on the pension fund is expected to generate the same effect as the rise in contribution rate by 0.9 percentage points, while a 1.0 percentage point increase in the rate of return is likely to have the same effect as the gain in the contribution rate by 2.3 percentage points. This implies that the efficient operation of the fund reserves will be critical for the successful maintenance of the partially-funded pension scheme, since the enhancement in the pension fund's rate of return will considerably ease the burden of contribution rates for future generations.

Figure 6: Changes in the Amount of Fund Reserve with Different Contribution Rates



Note: In Scenario 1, the contribution rate is fixed at 9.9% after 2010. In Scenario 2, the contribution rates are: 2010–2012: 9.5%, 2013–2015: 10%, 2016–2018: 10.5%, 2019–2021: 11%, 2022-2070: 11.3%

Table 5 demonstrates the result of a performance comparison between Korea's National Pension Fund and 10 other countries' public pension funds from 2000 to 2006. In this international comparison, Korea ranks above the medium level in terms of average rate of

return on the national pension fund, showing a stabilized pattern. Although the national pension fund has been managed with an emphasis on its stability as revealed in Table 5, it is also positively assessed in terms of profitability. However, if only 3-year (2004–2006) average performance values are compared, the rate of return on Korea's National Pension Fund is a mere half the profitability levels of the public pensions in other countries. This is because Korea's National Pension Fund has kept a conservative attitude in pension fund management, mainly focusing its investment on bonds. The safety-based investment distribution principle can serve as an obstacle to a more flexible adjustment of strategic asset allocations in response to the changes in the investment environment such as continuous decrease in interest rates after the financial crisis and stock market recovery.

Table 5: Performance Comparison between the National Pension Fund and the Pension Funds in Other Countries
(Unit: %)

	2006	2005	2004	2003	2002	2001	3-year Average (2004–2006)	6-year Average (2001–2006)
Korea	4.93* (5.77)*	9.55 (5.61)	5.69 (8.07)	7.83	6.35	8.99	6.72	7.40
Sweden (AP1)	9.8	17.5	11.4	16.5	-13.8	-5.6	12.90	5.97
US (CalPERS)	15.7	11.1	13.4	23.3	-9.5	-6.2	13.40	7.97
Canada (CPP)	15.5	8.50	17.6	-1.5	4.0	7.0	13.87	8.52
Canada (QPP)	14.6	14.7	12.2	15.2	-9.6	-4.99	13.83	7.02
Netherlands	9.5	12.8	11.5	11	-7.2	-0.7	11.27	6.15
Ireland	12.4	19.6	9.3	12.8	-16.1	3.3	13.77	6.88
Japan	-	14.37	4.43	13.01	-8.63	-2.65	7.28	3.93

Source: Moon et al. (2007)

* Korea's rates of return on pension fund are based on their book values. Values in parentheses are market values.

Discussions over specific measures to enhance the efficiency of the National Pension Fund management will not be addressed here since they are not in the scope of this study.[10] However, in Moon et al. (2007), various issues related to the pension fund management system have been discussed. Based on this, measures to strengthen the expertise, independency, and accountability of the fund's management have been suggested. The improvement measures include the establishment of the "National Pension Fund Management Corporation" which is independent from government departments and the political circle, and imposition of independent roles to determine the investment policy on the newly established "Pension Fund Management Committee" which is composed of experts in the private sector. If fiduciary duties including the enhancement of profitability and safety of the National Pension Fund management can be reinforced through this effort to advance the fund management system, it will contribute considerably to promote the financial soundness and alleviate the contribution burden of the current National Pension Scheme.

10 For more discussion about the impact of the National Pension Scheme on the financial market, its asset allocation structure, fund management system, and execution of shareholders' rights, see Moon (ed.) (2007).

4.4 Expansion of Opportunities to Secure Old Age Income

4.4.1 Adjustment of the Earnings Ceiling

As reviewed in the adequacy assessment, the amendment to the National Pension Act is expected to cause a decrease in the income replacement rate of the average income earners with 40-year coverage to 30% level in the long-term segment and that of high-income earners to below 20%. The reason behind this huge decline is the unreasonably low ceiling of earnings where the National Pension Scheme is applied. That is, the upper earnings limit determined at the time when the Nation Pension System was introduced has been fixed at its nominal value of 3.6 million KRW for the past 20 years, which led to the decrease in the earnings ceiling to 120% level of the average income today. As a result, a large number of workers have been restricted by this earnings ceiling, causing a huge loss in opportunities to attract additional earnings coverage.

Therefore, it seems urgent to expand the range of pensionable income, by raising the earnings ceiling to reflect income growth in the past 20 years. In the case of the US' Social Security System, the earnings ceiling is US$87,900 per year as of 2004, which is 290% of the average earnings (OECD 2007). Also, a constant ratio against which the average income level has been maintained with upward adjustments of this earnings ceiling, indexed with the average income growth rate of the whole society every year. It seems necessary for Korea to introduce such a system of linking the income growth rate with the level of earnings ceiling for the National Pension Scheme. By doing so, the social security function of the National Pension Scheme will have to be enhanced especially for the middle- and higher-income classes.

4.4.2 Activation of Other Sources of Old Age Income

Advanced multilayer old age income security systems are composed of public pensions at the national level, retirement pensions at the company level, and personal pensions and savings for old age at the individual level. Since the benefit cuts under the revised National Pension Act would lead to the contraction of the old age income security function of the National Pension Fund, it is necessary to actively vitalize the private pension market. In Korea, the "nominal" foundation for the multilayered old age income security system was laid with the introduction of the personal pension system in 1994 and the implementation of the retirement pension system in 2005. However, the function of the private pension market has not been actively vitalized until today,[11] resulting from various issues such as lack of incentives for pension subscription including tax benefits, insufficient means to protect subscribers, incomplete and imprudent regulations, and inadequate guarantee of portability (Ryu 2007). Therefore, it will be a very important policy task to rapidly activate the private pension market by alleviating such restrictions.

Another possible solution could be the vitalization of the recently introduced reverse mortgage market. This reverse mortgage system might be able to complement the general pension system since it can serve as a constant old age income source after retirement without concerns over securing housing finance. The activation of this reverse mortgage system will be very useful especially in Korea as an additional old age income source, considering the fact that over 80% of total assets possessed by people aged 60 and older are in real estate, and 70% of the elderly have their own houses (Park 2004). Because it is just in its initial stage, the reverse mortgage system is not yet widely recognized by people and the scope of houses to which this system can be applied is also limited. However, if actively promoted, the reverse mortgage system is likely to play an important role in the multilayer old age income security system targeting mid-to-high income classes.

11 As of September 2007, only 4.58% of the companies targeted by the retirement pension scheme have actually subscribed to the scheme. Also, it is pointed out that the personal pension system is not living up to its role because of a recent drop in household subscription rate (Ryu 2007).

5. SUMMARY AND CONCLUSIONS

This study focused on the quantitative assessment of the impact of the second amendment to the National Pension Act passed in July 2007 on the sustainability, equity, and adequacy of the National Pension Scheme. The assessment was based on simulation analyses and policy implications that can be applied for the development of the system in the future. Overall, the revision of the act can be positively assessed in light of its preemptive response to the country's rapidly aging society through measures to stabilize the pension finance, strengthen the rights of the stakeholders, and to rationalize the National Pension Scheme. However, there are certain additional tasks to complement the scheme from both the economic and welfare perspectives. The results of major analyses used in the assessment process of the revision of the National Pension Act and future policy tasks drawn by the analysis results can be summarized as follows.

First, despite the huge benefit cuts, we have assessed the reform of the National Pension Scheme as an insufficient measure for striking a long-term balance of the pension finance. This is mainly because the basic principles of the financial stabilization measures were marred in the process of political compromise. Therefore, it is important to exclude political logic as much as possible and to come up with more reasonable measures to stabilize the pension finance by setting clearer and more specific goals for fund management and financial stabilization. To this end, it is necessary to draw up such plans as shortening the adjustment period for benefit cuts, while introducing the automatic balance mechanism to reflect the increase in life expectancy, together with a gradual increase in contribution rates. These measures will contribute not only to the stabilization of the pension finance but also to the enhancement of intergenerational equity.

Secondly, the results of simulation analyses suggest that the improvement of the Pension Fund's rate of return by 0.5 percentage points per year can delay the timing of fund exhaustion by more than five years. This suggests that the enhancement of profitability and stability through an effort to advance the pension fund management system is a very important policy task. Also, non-systemic policy measures such as a plan to increase birthrates or to provide incentives for the elderly to participate in income-generating activities can make indirect contributions to the stabilization of national pension finance.

Lastly, we note that the role of the National Pension Scheme as an old age income source will be reduced in the long term with the amendment to the National Pension Act, which requires an effort to secure various other old age income sources. To this end, it is urgent to expand the range of pensionable incomes through an upward adjustment of the current earnings ceiling which has been fixed for the last 20 years at its nominal value of 3.6 million KRW. It is also important to introduce a method to link this increase with the income growth rate. To promote retirement pension products at the company level and to activate the private personal pension market, a more advanced multilayer old age income security system should be established through system reinforcement and support measures. Also, the strengthening of the recently introduced reverse mortgage system could be an effective complementary measure, given the fact that 80% of the total assets possessed by the elderly population in Korea are in the form of real estate.

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