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**Managing Pension and Healthcare Costs in Rapidly
Aging Depopulating Countries: The Case of Korea**

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1. Introduction

The rapidly growing phenomenon of the population aging and low birth rate is expected to bring enormous demographic changes in the Korean society. According to the future population prospects released by the National Statistics Office (2006), the average life expectancy of Koreans is projected to rise from 78.6 years in 2005 to 86.0 years in 2050. As a result, the population aged 65 years or older is expected to reach 16.2 million in 2050, 3.7 times larger than 4.4 million in 2005. The drastic decrease in birth rate as well as the lengthened life expectancy will affect the demographic structure of the Korean society to a serious degree. In particular, the working-age population (ages between 15~64) is expected to drop by a record of 35% from 34.5 million in 2005 to 22.4 million in 2050. Among them, the prime working-age population (ages between 25~49) is also projected to fall by half during the same time frame. Such a large increase in the elderly population and the decrease in the working-age population will place a huge burden on the Korean society in supporting the elderly. The aging population structure will cause a comprehensive impact on the overall national conditions including the labor market, financial market, and the national fiscal plan. Such impact will become more apparent after a decade from now, and expected impacts include the relative reduction in the working-age population as the number of elderly population increases combined with the decrease in the accumulation of productive capital due to low savings rate. Therefore, when other conditions remain the same, the aging population will adversely affect the growth potential of the Korean economy.

The population aging is expected to affect the overall economy by reducing the savings rate, putting more burdens on the pension and health insurance, and creating additional demands for welfare, which will lead to the aggravated fiscal condition. Since the economic implications of the population aging accompany issues related to social and economic institutions, an institutional reform takes a larger part in the policy to counter the aging society. However, it would not be easy to reform institutions entangled with conflicting issues of interests among each social level. Moreover, since

matters related to the population aging cannot be changed easily, it can be said that the current situation faced by the Korean economy is quite serious. Under such conditions, it is important to promptly determine the policy direction to prepare for the aging society, formulate a comprehensive national consensus on the direction, and carry out the relevant policy consistently in accordance with the direction.

Although the rapid demographic change affects various sectors of an economy, most direct and significant impacts will fall on age-related public programs including public pension and healthcare systems. Population aging puts increasing pressure on spending of public pension and healthcare programs while decrease in working population shrinks the revenue basis, thereby threatens the financial sustainability of the system. Hence, the biggest challenge facing social insurance system in Korea is to contain growing public expenditures driven by population aging and to secure adequate financial resources to maintain sustainable social protection system for the elderly. At the same time, a rapidly aging population will make social protection of the elderly more important. However, due to their short history, the Korean public pension and healthcare systems are still immature in terms of both their coverages and benefit provisions. As strengthening income and health protection through extended coverage or additional insurance benefits requires more funding, it will not be an easy task to expand social protection without sacrificing financial stability. In this regard, this paper examines the impacts of population aging on public pension and healthcare systems in Korea, and discusses the policy issues for providing more sustainable and adequate risk protection for the elderly.

2. Population Aging and Public Pension System in Korea

2.1. Narrow coverage of National Pension

Inclusion of urban self-employed to the target of the National Pension Scheme in 1999 has developed, though nominal, a framework of a universal pension system that

covers the whole nation. However, it is true that there exists a wide loophole brought by the insured who are exempted from contribution of payments and who have deferred their payments because of business closure, unemployment, or temporary leave. The official statistics show that as of 2009 the insured persons exempted from contribution payments numbered above 5 million, which accounts for 27.1% of the total number of insured and 58.2% of that of the individually insured (Table 1).

It is also assumed that there are a considerable number of insured individuals who report their incomes but are unable to pay contribution. As of 2009, the contribution collection rate of the total income reporters including workplace-based insured persons recorded 92.0% in terms of the amount collected, but 62.1% in terms of individually insured persons. In particular, approximately a half of those who have failed to pay the contribution are long-term delinquents who extended their deferral period to more than two years (National Pension Service, 2009).

Table 1: Number of Insured Persons in National Pension (2009)

(Unit: Persons, %)

Total	Workplace-based Insured	Individually Insured	Income Reporter	Contribution Exemption
			18,623,845 (100.0)	9,866,681 (53.0)

Source: National Pension Statistical Yearbook , 2009

The existence of a wide range of the insured exempted from contribution of payments is likely to increase the potential risk of pulling them into the elderly poor. Such risk is clearly found in the cases for the exemption of contribution payment. As shown in Table 2, the ratio of the insured exempted from contribution for the reason of subsistence difficulties accounts for almost 90% of the total number of cases, and a third of them turn out to be unemployed. Moreover, the majority of non-regular workers, such as temporary and daily laborers and self-employed small business individuals, have a greater incentive to evade income reporting or underreport their incomes due to subsistence difficulties. However, it is difficult to exactly know the actual size of their

incomes due to poor administrative capability of the National Pension Corporation. As a result, many non-regular and self-employed small business individuals, who are actually engaged in economic activities, are considered as the insured exempted from contribution of payments and therefore, excluded from participating in the system. This section closely examines the behavioral characteristics shown in participation of the National Pension and the factors why people decide not to join the scheme.

Table 2: Cases for the Exemption of Contribution Payment (2009)

(Unit: Persons, %)

Total	Jobless	Business Closure	Students	Temporary Leave	Livelihood Difficulties	Others*
5,052,264 (100.0)	3,817,904 (75.6)	433,544 (8.6)	278,259 (5.5)	92,695 (1.8)	7,229 (0.1)	422,633 (8.4)

* Includes military personnel, inmates, missing persons, hospital patients, etc.
Source: National Pension Statistical Yearbook, 2009

2.1.1. Participation behaviors of individually insured

This study uses research data from the Korea Welfare Panel Study (KOWEPS), currently the largest panel in Korea, which has accumulated over 7,000 households since 2006 and also includes farming and fishing households, which makes it more suitable for this study. This analysis extracts 4,115 samples from 2008 data between the ages of 18 and 59, the target age of the National Pension.

As shown in Table 3, among the total number of persons subject to individual insurance, only 34.4% contributed to payments in 2007, meaning that there is a wide range of uninsured persons, including the insured who are exempted from the payment or deferred their contributions. In particular, more than a half of respondents who are classified as the insured exempted from contribution turns out to be economically active, implying that the 'loophole' problems caused by poor administrative capability in gathering accurate information on their income status are quite serious. It is also noted that among individually insured persons, 33.4% turns out to be wage workers, and the majority of them are legally entitled to the status of workplace-based insured but have remained as individually insured because their status were not reported properly. This

also implies that it would be a huge error to consider the individually insured as equal to employer or self-employed without employees.

Table 3: Number of Insured in National Pension by Occupational Status

(Unit: Persons, %)

Category		Total	Self-employed			Wage Workers				Others ¹⁾
			Sub. Total	Employer	Self-employed	Sub. Total	Regular	Temporary	Daily-Laborer	
Workplace-based (2,156)	Contribution	2,152 (99.79)	62 (99.0)	57 (98.9)	5 (100)	2,081 (99.8)	1,888 (99.8)	171 (100)	22 (100)	9 (100)
	Non-contribution	5 (0.21)	1 (1.0)	1 (1.1)	0 (0.0)	4 (0.2)	4 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)
Individually (1,959)	Contribution	674 (34.4)	406 (58.5)	129 (67.0)	277 (55.2)	182 (27.8)	92 (36.4)	29 (17.4)	62 (25.9)	85 (14.0)
	Non-contribution	1,285 (65.6)	288 (41.5)	64 (33.0)	225 (44.8)	474 (72.2)	161 (63.6)	136 (82.7)	176 (74.1)	523 (86.0)
	Contribution Exemption	1,111 (86.8)	195 (67.8)	46 (71.9)	149 (66.6)	412 (87.3)	146 (90.8)	115 (85.1)	151 (85.9)	504 (96.7)
	Contribution Deferral	169 (13.2)	92 (32.2)	18 (28.1)	75 (33.4)	60 (12.7)	15 (9.2)	20 (14.9)	25 (14.1)	17 (3.3)

1) includes unpaid family workers, unemployed, and economically non-active population

Source: Calculated from Korea Welfare Panel Data, 2008.

The actual pension participation rate of persons subject to individual insurance demonstrates considerable differences by the type of their occupational status. Non-participation rate of wage workers recorded 72.2% on average, meaning that over seven out of ten workers have failed to pay the contribution on time. This is 1.7 times higher than 41.5%, the non-participation rate of self-employed persons. Non-participation rate of wage workers recorded 63.6% for regular workers, 74.1% for daily laborers, and 82.7% for temporary workers, suggesting that the higher the instability of the occupational status, the lower the pension participation rate. This means that the loophole problem of participating in the National Pension is probably the most threatening among non-regular workers, indicating that they should be considered as the primary target in efforts to formulate policy measures to tighten the loophole.

Table 4 shows the result of comparing individual characteristics of persons subject to individual insurance depending on their participation or non-participation in the National Pension. The one that stands out the most is that the average disposable

income of uninsured persons is lower by over 20% than that of insured persons. Also, as the household income declines, their non-participation rate increases fast, meaning that the economic reasons are a significant determinant of participation in the pension. On the other hand, it is worth noting that as for persons with average educational background, the participation rate turned out to be lower than the non-participation rate. By age group, the younger they are, the lower the participation rate, and in particular the non-participation rate of those in the 30s and younger turned out to be very seriously reaching high as 95%. Also, the participation rate of female turned out approximately 20% lower than that of male, meaning a bigger loophole among women.

Table 4: Major Characteristics of Individually Insured Persons

(Unit: Persons, %)

Category		Total		Participants		Non- Participants	
		Obs.	Ratio (%)	Obs.	Ratio (%)	Obs.	Ratio (%)
Total		1,959	100.0	674	34.4	1,285	65.6
Age	18~30	205	10.5	11	5.2 <1.6>	194	94.8 <15.1>
	31~40	684	34.9	166	24.2 <24.6>	519	75.8 <40.4>
	41~50	650	33.2	264	40.7 <39.2>	385	59.3 <30.0>
	51~59	420	21.5	233	55.4 <34.6>	187	44.6 <14.6>
	Average (yrs.)	42.4		46.5		40.3	
Educational Background	Middle School or Lower	329	16.8	156	47.3 <23.1>	173	52.7 <13.5>
	High School	957	48.8	319	33.4 <47.4>	637	66.6 <49.6>
	College or Higher	673	34.4	199	29.5 <29.5>	475	70.5 <36.9>
	Years of Schooling	12.35		11.98		12.54	
Gender	Male	1,235	63.0	511	41.4 <75.8>	724	58.6 <56.4>
	Female	724	37.0	163	22.5 <24.2>	561	77.5 <43.6>
Spouse	Yes	1,509	77.1	575	38.1 <85.3>	935	61.9 <72.7>
	No	450	22.9	99	22.0 <14.7>	351	78.0 <27.3>
No. of Family Members	Average	3.51		3.61		3.46	
Householder	Yes	1,205	61.5	518	43.0 <76.8>	687	57.0 <53.5>
	No	754	38.5	156	20.7 <23.2>	598	79.3 <46.5>
Economic Status	Regular Worker	253	12.9	92	36.4 <13.7>	161	63.6 <12.5>
	Temporary Worker	165	8.4	29	17.4 <4.2>	136	82.6 <10.6>
	Daily Laborer	238	12.2	62	25.9 <9.2>	176	74.1 <13.7>
	Self-employed	695	35.5	406	58.5 <60.3>	288	41.5 <22.4>
	Others	608	31.1	85	14.0 <12.7>	523	86.0 <40.7>

Disposable Income ¹⁾ (10,000 won)	1,000 or Lower	291	14.8	73	25.1 <10.8>	218	74.9 <16.9>
	1,000~2,000	823	42.0	248	30.2 <36.8>	575	69.8 <44.7>
	2,000~3,000	526	26.8	185	35.3 <27.5>	340	64.7 <26.5>
	3,000~4,000	173	8.8	77	44.9 <11.5>	95	55.1 <7.4>
	4,000 or Higher	148	7.5	90	60.8 <13.3>	58	39.2 <4.5>
	Average	2,178.7		2,547.9		1,985.2	

1) Adjusted for family size using \sqrt{n}

Source: Calculated from Korea Welfare Panel Data, 2008.

In an attempt to closely examine the impacts of individual characteristics on participation behaviors, the study conducts an estimation using the Probit model, and its results are presented in Table 5, which is the estimation of the participation probability of 1,993 individually insured persons among the sample. As expected, the National Pension participation probability of individually insured persons turned out to be highly sensitive to variables such as gender, age, and income. It is estimated that the participation probability appears to increase significantly according to higher income, older age and male gender. However, unlike what is expected, the estimated coefficients showed negative signs and low statistical significance in the category of educational background, meaning little impact on the participation probability.

It is worth noting that the National Pension participation probability varies significantly depending on the occupational status of individually insured persons. With temporary workers as the standard dummy, the study finds that the participation probability of daily laborers has no statistically significant difference, whereas that of regular and self-employed workers is estimated to increase by 18.4 percentage points and 31.3 percentage points, respectively. Given that the National Pension participation rate of temporary workers recorded 17.4%, if all other conditions are equal, the participation probability of regular workers is two times higher than that of temporary workers, while that of self-employed is 2.8 times higher than temporary workers. In other words, even when individual characteristics are controlled, the participation probability of wage workers and self-employed with employees among individually insured persons shows a considerable difference. It is estimated that the participation probability of those facing job insecurity such as temporary and daily laborers turns out particularly low.

Table 5: Estimation Results for Individually Insured Persons (Probit)

Dependent Variables		Model 1		Model 2	
		dy/dx	(s.e)	dy/dx	(s.e)
Male		0.0758***	(0.028)	0.0736***	(0.028)
Age		0.0375**	(0.016)	0.0355**	(0.016)
Age ²		-0.0002	(0.000)	-0.0002	(0.000)
Economic Status (Basis: Temporary Worker)	Regular Worker	0.1835***	(0.063)	0.1822***	(0.063)
	Daily Laborer	0.0023	(0.058)	0.0048	(0.058)
	Self- employed	0.3129***	(0.052)	0.3150***	(0.052)
	Others*	-0.0513	(0.052)	-0.0492	(0.052)
Educational Background (Basis: Middle School or lower)	High School	-0.0475	(0.037)		
	College or Higher	-0.0399	(0.042)		
Years of Schooling				-0.0146	(0.021)
ln (Disposable Income) ¹⁾		0.1144***	(0.023)	0.1140***	(0.023)
Observations		1,933		1,933	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

1) Adjusted for family size using $\frac{1}{\sqrt{n}}$

2.1.2. Participation behaviors of wage workers

Table 6 is the result of a close comparison between individually insured wage workers and workplace-based insured workers, which apparently is the most serious problems of loophole in pension participation. The table shows a clear difference in the individual characteristics between workplace-insured workers and individually insured workers. First, the average income level of individually insured workers accounted for only 77.3% of the workplace-based insured workers, meaning that low-income workers are more often left out from the workplace-based insured status. Also, among persons subject to individual insurance, there is an average income gap of over 10% between the insured workers who pay the contribution to the National Pension and who do not. The participation behavior varies significantly according to the occupational status of workers. As for regular workers, 88.1% of the total samples (2,147) are the workplace-based insured, whereas as for temporary and daily laborers, only 32.2% are the workplace-based insured. Also, the ratio of uninsured workers against the total was 7.6% in regular workers, 41% in temporary workers, and 37.7% in daily laborers, reconfirming that the higher the instability of the occupational status, the lower the pension participation rate.

Significant differences are observed in the individual characteristics, such as age, educational background, and gender. The average age of workplace-based insured workers is younger than that of the individually insured workers, while among persons subject to individual insurance, the average age of the insured is approximately 5-year senior to the uninsured, meaning that the loophole problems experienced by younger workers are relatively more serious than other age groups. Moreover, the ratio of individually insured male workers (24.5%) is slightly higher than that of female workers (23.1%), while that of uninsured female workers (18.6%) is slightly lower than that of male workers (17.1%). As for educational background, the average years of schooling of workplace-based insured workers are approximately 10% longer than that of individually insured workers, while among individually insured persons, the schooling years of uninsured workers is longer, which is an interesting result.

Table 6: Major Characteristics of Wage Workers

(Unit: Persons, %)

Total		Individually Insured						Workplace-based Insured	
		Sub. Total		Insured		Non-insured		Obs.	Ratio (%)
		Obs.	Ratio (%)	Obs.	Ratio (%)	Obs.	Ratio (%)		
Total		663	100.0	184	27.8	479	72.2	2,085	99.82
Age	18~30	69	10.5	4	6.0 <2.3>	65	94.0 <13.6>	466	99.7 <22.3>
	31~40	233	35.2	47	20.3 <25.7>	186	79.7 <38.9>	838	99.8 <40.2>
	41~50	233	35.2	76	32.8 <41.5>	157	67.2 <32.8>	560	99.8 <26.9>
	51~59	127	19.1	56	44.4 <30.5>	71	55.6 <14.7>	222	100 <10.7>
	Average (yrs.)	42.3		45.8		40.9		38.15	
Educational Background	Middle School or Lower	116	17.5	49	42.3 <26.6>	67	57.7 <14.0>	171	100 <8.2>
	High School	373	56.2	88	23.7 <47.9>	284	76.3 <59.4>	729	99.6 <35.0>
	College or Higher	175	26.3	47	27.0 <25.5>	127	73.0 <26.6>	1,185	99.9 <56.9>
	Average Years of Schooling	12.1		11.6		12.2		13.57	
Gender	Male	451	68.0	137	30.3 <74.1>	314	69.7 <65.7>	1,390	99.7 <66.6>
	Female	212	32.0	48	22.5 <25.9>	164	77.5 <34.3>	696	100 <33.4>
Economic Status	Regular Worker	255	38.6	93	36.4 <50.5>	162	63.6 <34.0>	1,892	99.8 <90.7>

	Temporary Worker	166	25.1	29	17.4 <15.7>	138	82.6 <28.7>	171	100 <8.2>
	Daily laborer	241	36.3	62	25.9 <33.8>	178	74.1 <37.3>	22	100 <1.1>
Workplace Size (Persons)	1~4	229	35.2	53	23.3 <29.6>	176	76.7 <37.4>	132	99.1 <6.4>
	5~9	157	24.2	34	21.9 <19.1>	123	78.1 <26.2>	216	98.8 <10.5>
	10~99	185	28.5	61	33.1 <34.0>	124	67.0 <26.4>	728	100 <35.4>
	100~299	26	4.0	10	38.0 <5.5>	16	62.0 <3.4>	296	100 <14.4>
	300 or Higher	52	8.1	21	41.1 <11.9>	31	59.0 <6.6>	686	100 <33.3>
Business Type	Agriculture, Forestry, and Fishery	6	1.0	1	17.1 <0.6>	5	83.0 <1.1>	7	100 <0.4>
	Manufacturing	68	10.2	20	29.3 <10.7>	48	70.7 <10.0>	763	100 <36.7>
	Construction	171	25.8	46	26.9 <25.0>	125	73.1 <26.2>	147	98.4 <7.1>
	Wholesale & Retail Trade and Accommodation	148	22.5	20	13.6 <11.0>	129	86.4 <26.9>	223	100 <10.7>
	Transportation and Telecommunications	51	7.6	20	39.2 <10.7>	31	60.8 <6.4>	171	99.1 <8.2>
	Other Services	169	25.5	61	35.9 <32.9>	108	64.1 <22.6>	508	100 <24.4>
	Public Administration, Defense, and Education	49	7.4	17	33.9 <9.0>	33	66.1 <6.8>	262	100 <12.6>
Disposable Income (10,000 won)	1,000 or Lower	77	11.6	17	21.5 <9.0>	61	78.5 <12.7>	62	100 <3.0>
	1,000~2,000	331	49.9	78	23.6 <42.4>	253	76.4 <52.9>	658	99.8 <31.6>
	2,000~3,000	178	26.8	56	31.4 <30.3>	122	68.6 <25.5>	716	99.6 <34.3>
	3,000~4,000	44	6.7	19	41.8 <10.1>	26	58.2 <5.4>	389	100 <18.6>
	4,000 or Higher	33	4.9	15	46.8 <8.3>	17	53.3 <3.6>	261	100 <12.5>
	Average	2,066.6		2,241.7		1,999.2		2,673.6	

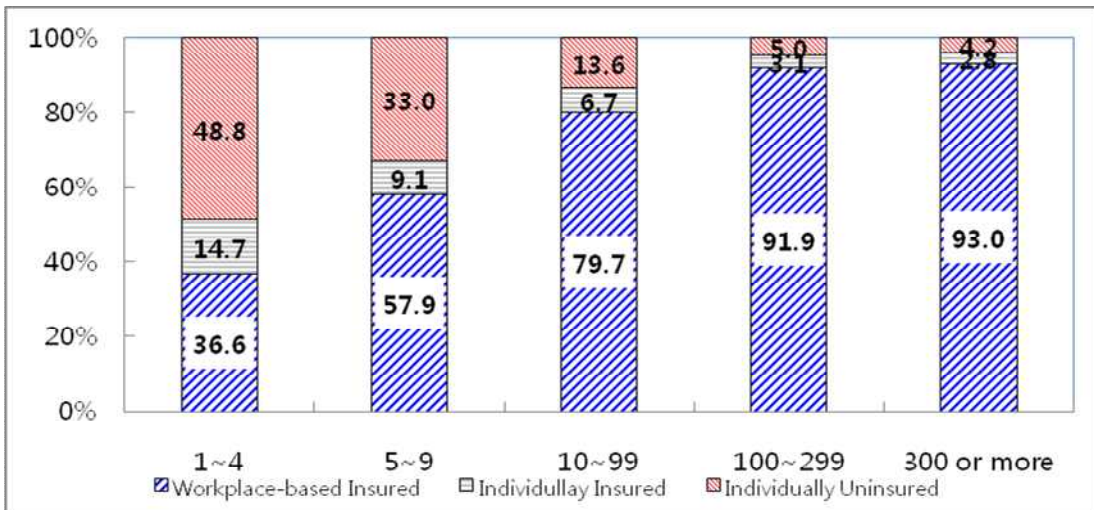
Source: Calculated from Korea Welfare Panel Data, 2008.

It should be noted that the ratio of workers who are left out from the workplace-based insured status and participation in the National Pension varies significantly according to the workplace size and business type. As shown in Figure 1, the poorer and smaller the workplace individuals belong to, the more they are unlikely to be reported and participate in the National Pension. In particular, the ratio of workplace-based insured workers recorded 36.6% in the workplace with less than 5 employees and 57.9% in that with 5~9 employees, indicating that the loophole problems met by workers in the workplace with 10 or less employees are very serious. By business type, the ratio of workplace-based insured workers

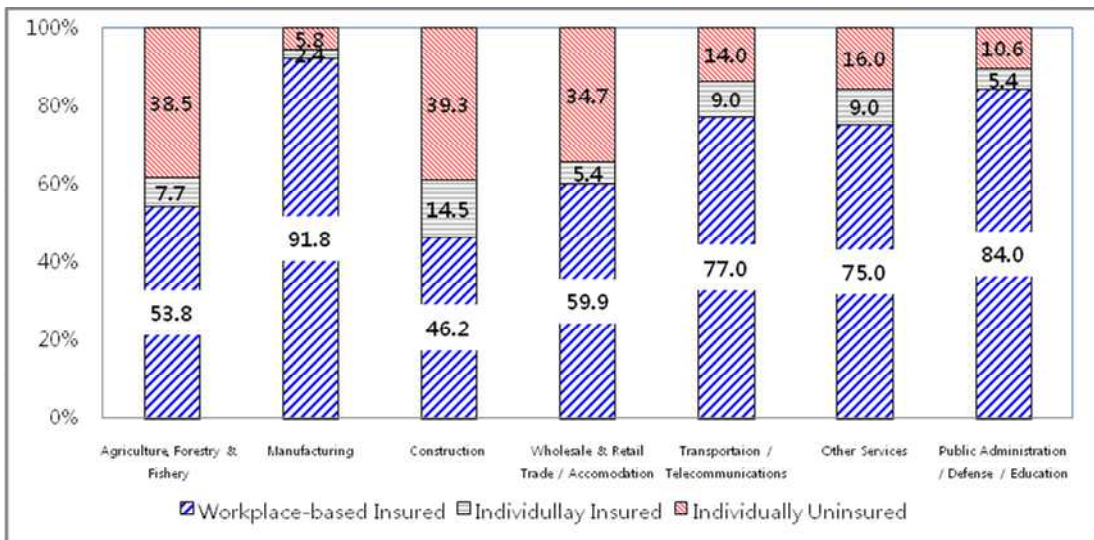
recorded 91.8% in the manufacturing industry, while 46.2% in the construction industry in which the majority of employees are daily laborers. In the service industry, the ratio of workplace-based insured workers recorded approximately 60% in the wholesale & retail trade and the accommodation sector, which includes a large number of small-sized and poor businesses.

Figure 1: Participation Behavior of Wage Workers by Workplace Size and Business Type

A. By Workplace Size



B. By Business Type



Source: Calculated from Korea Welfare Panel Data, 2008.

Table 7 shows the estimates of participation behaviors of the total number of 2,746 wage workers including workplace-based and individually insured persons. According to the estimation that uses the Probit model, as for wage workers, some variables such as income, education background, and age affect the decision to participate in the National Pension. Also, the occupational status turns out to be correlated with the participation rate in the National Pension. To be specific, the participation rate of regular workers is higher by 23.0 percentage points than that of temporary workers, which is a large gap, but that of daily laborers is estimated to be lower by 8.4 percentage points than that of temporary workers, which suggests that the higher the instability of the occupational status, the lower the pension participation rate.

The participation rate of workers turns out to be influenced by the business type or workplace size which they work for, even when the individual characteristics are statistically controlled. In other words, workers in poorer and smaller workplaces tend to show lower participation rate. In particular, the participation rate of workers in the workplace with less than 10 employees is lower by 8~11 percentage points than that of workers in the workplace with 10 or more employees. As for business type, comparing to the manufacturing industry, the participation rate in the National Pension in other industries is estimated to be considerably low. In particular, the participation rate of workers in agriculture, forestry, and fishery and wholesale & retail trade and accommodation is significantly lower by over 15 percentage points than that of the manufacturing industry, suggesting that they are experiencing the most serious loophole problems. Also, the participation rate of employees in other services and the construction industry turns out to be lower by around 10 percentage points than those in the manufacturing industry. Such estimates imply that the loophole problem of the National Pension is far more serious among non-regular workers in the low-income class, particularly in the small-sized and poor conventional sector as well as the wholesale & retail trade and accommodation sectors.

Table 7: Estimation Results for Wage Workers

Dependent Variables		Participation or Non-participation	
		dy/dx	(s.e)
Male		0.0109	(0.013)
Age		-0.0138***	(0.005)
Age ²		0.0002**	(0.000)
Educational Background (Basis: Middle School or Lower)	High School	-0.0823***	(0.027)
	College or Higher	-0.0223	(0.026)
Economic Status (Basis: Temporary Worker)	Regular Worker	0.2301***	(0.027)
	Daily Laborer	-0.0840**	(0.034)
Workplace Size (Basis: less than 5 employees)	5~9	0.0235*	(0.014)
	10~99	0.0885***	(0.012)
	100~299	0.0864***	(0.009)
	Over 300	0.1138***	(0.012)
Business Type (Basis: Manufacturing)	Agriculture, Forestry, and Fishery	-0.1820*	(0.111)
	Construction	-0.1080***	(0.033)
	Wholesale & Retail Trade and Accommodation	-0.1547***	(0.033)
	Transportation and Telecommunications	-0.1140***	(0.039)
	Other Services	-0.0919***	(0.023)
	Public Administration, Defense, and Education	-0.0430	(0.029)
ln (dincome) ¹⁾		0.0280**	(0.012)
Observations		2,746	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

1) Adjusted for family size using \sqrt{Fz}

2.2. Financial sustainability of National Pension¹

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 Average income replacement rate for insured people with 40 years of coverage was adjusted to 60% from

¹ This section is a summarized version of ch. 2 and ch. 4 in Moon (2008).

70%, together with extension of the age entitled to receive the first pension benefits to 65, and adoption of the actuarial valuation (conducted every 5 years, starting in 2003), while maintaining the basic framework of the previous unified pension scheme.

Despite the reform according to the actuarial valuation conducted in 2003, 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 made a second reform for the National Pension Scheme in 2008 containing measures to strengthen the financial stability of the fund and to ensure the substantiality of various systems. The second reform 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, the Deferred Pension System was drawn up to encourage the elderly to engage in income-earning activities. The other amendments include: (i) an increase in the scale of the benefit cuts to prevent early retirement; (ii) an improvement of the Concurrent Benefits Adjustment System²; (iii) the prohibition of the seizure of paid pensions; (iv) continuous payment of the Divided Pension, which is originally paid to a divorced spouse, even after a beneficiary remarries; and (v) the expansion of the scope of beneficiaries for the Dependents' Pension. Table 8 summarizes the major contents of the amendment to the National Pension Act.

² 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.

Table 8: 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 –6 percentage points)
	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: Moon (2009)

* 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.

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. Table 9 shows the results of comparing the financial prospects for the pension fund before and after the amendment of the National Pension Fund Act³. As shown in Table 9, 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 2008. 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.

³ For more specific information on the actuarial evaluation process of the National Pension Scheme, refer to Moon (2009).

Table 9: Comparison of Financial Prospects before and after the Amendment

(Unit: trillion won, %)

	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.

Source: Moon (2009)

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 (2.5 percentage points 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. It is estimated that 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 (Moon, 2009). 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 IV 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 10 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 10, 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 10: Actuarial Assessment before and after the Amendment to the National Pension Act

(Unit: trillion won, %)

	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
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)	-	-

Source: Moon (2009)

As observed in Table 10, 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.

3. Population Aging and Healthcare System in Korea

The healthcare system of Korea has three components including the National Health Insurance (NHI) program, Medical Aid program and Long-term Care Insurance (LTCI) program. The NHI program covers the whole population as a compulsory social insurance benefits scheme, financed mainly by contributions from the insured and government subsidy. The medical Aid program is a public assistance scheme to secure the minimum livelihood of low-income households by providing medical services for free or with reduced price. In 2008, 1.84 million people, or 3.7% of the total insured, were covered by the Medical Aid program (NHIC, 2009). In addition, the Korean government introduced recently the separate LTCI program in order to meet the needs of elderly with difficulties due to geriatric disease, this section examines briefly the ascent financial state and policy issues related to population aging in healthcare system in Korea.

3.1. National Health Insurance system

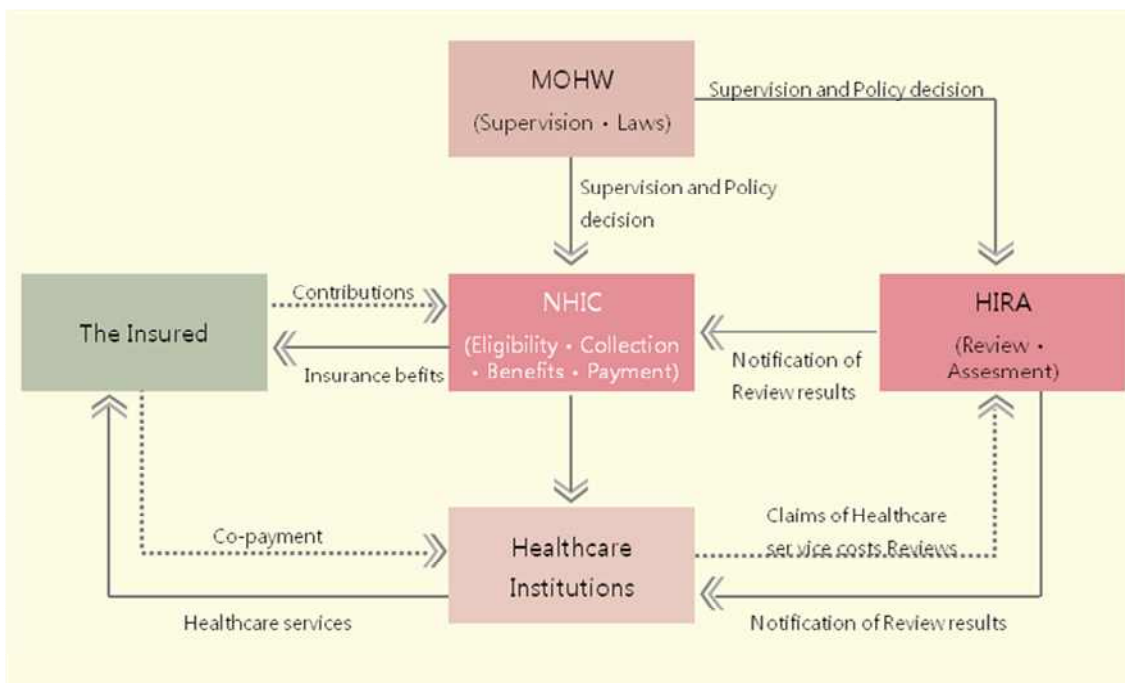
The Korean government first implemented the mandatory NHI program for the

workplace with 500 employees or more in 1977. The coverage of the NHI program had been gradually expanded to smaller workplaces and self-employed in rural and urban areas, until the program achieved universal coverage by 1989. The rapid coverage expansion of the NHI has contributed greatly to improving health conditions of the public by ensuring low cost access to healthcare. Compared to several decades ago, the health outcomes have improved markedly in terms of life expectancy and infant mortality; life expectancy at birth of total population increased to 79.9 in 2008, which surpasses the OECD average, from 61.9 in 1970. Infant mortality rate was reduced drastically from 81.5 per 1,000 in 1970 to 4.4 in 2010 (OECD health database).

The Ministry of Health and Welfare (MOHW) currently manages and supervises the operation of the NHI program, while the National Health Insurance Corporation (NHIC), a non-profit public institution, is a single insurer that provides health insurance to all Korean citizens.⁴ The NHIC is in charge of administering the program including the management of enrollment of the insured and their dependents, collection of contributions, setting of medical fee schedules through negotiation with providers as well as the provision of health insurance benefits. The Health Insurance Review and Assessment Service (HIRA) are responsible for evaluating the medical fees, quality of healthcare institutions, and adequacy of medical service. The operational structure of NHI is depicted in (Figure 2).

⁴ At the time of its inception, the NHI program was separately operated by numerous insurance societies. By 1989, the number of insurance societies reached 367. In July 2000, the Korean government integrated them into a single insurer, the NHIC, in order to resolve inequity among insurance funds and to improve managerial efficiency.

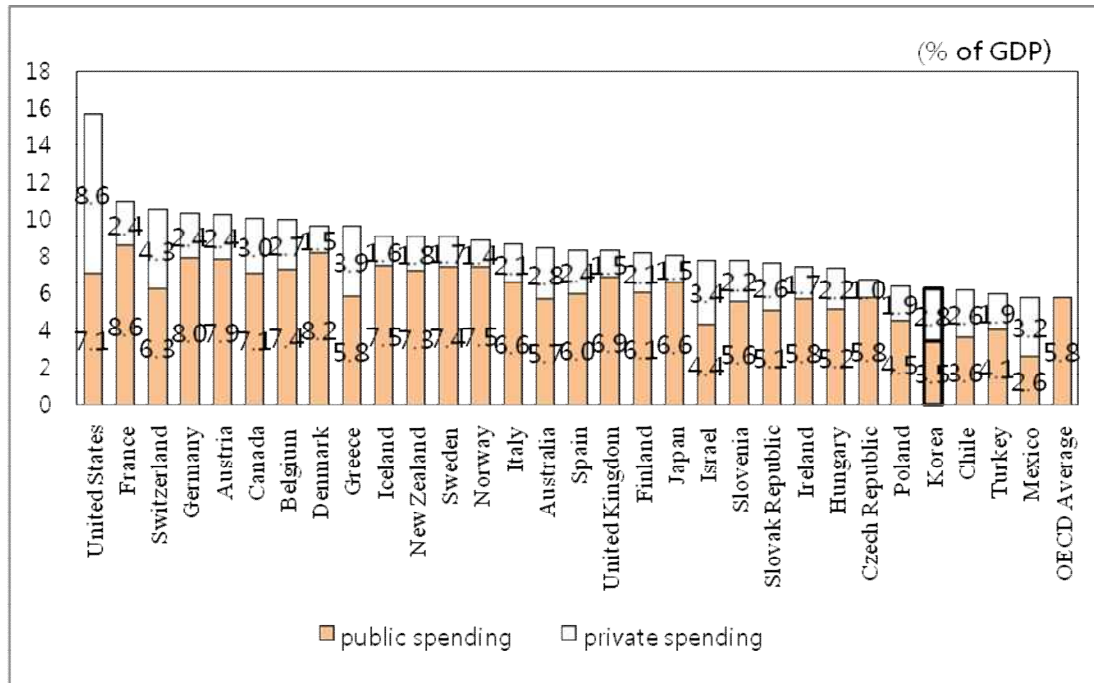
Figure 2: NHI Operation System



Source: National Health Insurance Corporation, 2009.

Despite the universal coverage of the NHI and the remarkable improvement in health conditions, Korea has been able to keep health expenditures at relatively low level and so far the Korea's total health expenditures accounted for 6.3% of GDP in 2007, the fourth lowest in OECD countries (Figure 3). This is partly due to Korea's relatively young population structure. The elderly population aged 65 and over in Korea, for instance, accounted for 11.0% of the total population in 2010, which is less than a half of 22.1% (2008) of Japanese counterpart. However, a more direct reason for low total health expenditure is due to the insufficient role of the public sector. As shown in Figure 2, the public spending on health accounted for 3.5% of GDP in 2007, second lowest in OECD member countries. The Korean government has traditionally kept the public health expenditure under control by limiting the range of benefits covered by the NHI, and by fixing medical prices at low levels. The containment of public spending played a critical role in rapidly achieving universal coverage (Jones, 2010). However, as a result, the level of risk protection fell short of being adequate; public expenditure on health accounted for only 55.3% of total expenditure, much lower than the OECD average.

Figure 3: Total Expenditure on Health in OECD Countries (2007)



Source: OECD Health Statistics (data base), 2010.

The NHI benefits are payable to the insured and their dependants in cases of prevention and treatment of sickness and injury, childbirth, health promotion and rehabilitation. Benefits are granted both in cash and in-kind. Financial resources of the NHI program come mainly from the contributions from the insured and government subsidies. The current contribution rate for the workplace-insured is 5.64% of monthly average wage, including the LTCI premiums, which is shared equally by employer and employee. The contribution rate has been adjusted upward continuously from 3.63% in 2002 to 5.64% in 2011 to finance the ever-increasing medical costs. The contribution for self-employed is separately calculated on the basis of their income, using a formula in which the insured persons' properties, income, motor vehicles, age and gender are taken into consideration.⁵ In 2009, contributions from the insured constitute 83.2% of total revenue. The government subsidized 15.3% of the total revenue in the same year; 12.1% comes from the General Account financed by general tax revenue, and 3.3% from the Health Promotion Fund financed by surcharge on tobacco.

⁵ In 2009, compliance rates of workplace-insured and self-employed are 99.6% and 96.4%, respectively (NHIC, 2010).

Private financing consists of co-payment on covered services and out-of-pocket payments for non-covered services. The co-payment rate is currently set at 20% of total treatment cost for inpatient service. The co-payment rates range from 30% to 60% for outpatient service depending on the level and type of care institutions.⁶ The share of out-of-pocket payments by patients for non-covered services is on the declining trend due to the government's continuous effort for providing the people with adequate health protection. However, it still accounts for more than 20% of the total health expenditure. The high co-payment rate together with vast existence of non-covered healthcare services make the Korean healthcare system still rely heavily on private financing and limit the government's role in terms of health-related risk protection of the public.

Recently, the benefit payments of NHI are increasing at a very rapid pace. The size of NHI's total expenditure grew by more than double during the last decade, showing average increase rate of 12.7% per annum (Table 11). The recent skyrocketing health cost is driven both by automatic increase due to demographic changes, and by discretionary increase due to government's effort to secure better protection. On the automatic side, population aging is the major driver for the cost hike; the number of the elderly aged 65 and over in Korea has increased by 160% during the last decade, from 3.4 million in 2000 to 5.4 million in 2009. It is inevitable that health spending should increase with the rising share of the elderly, as the medical costs per capita are usually higher for the elderly. What's more serious is the fact that health spending per elderly is rising much faster than that of younger generations. As depicted in Figure 4, benefit payments per capita for the elderly was 3.2 times higher than the payments for those under 65 in 2002. However, the gap has been widened to 4.3 times by 2009.

⁶ The Co-payment Ceiling System was introduced in July 2004 to alleviate the financial burden on households against catastrophic or high-cost diseases.

Table 11: Financial Indicators of NHIC (2000-2009)

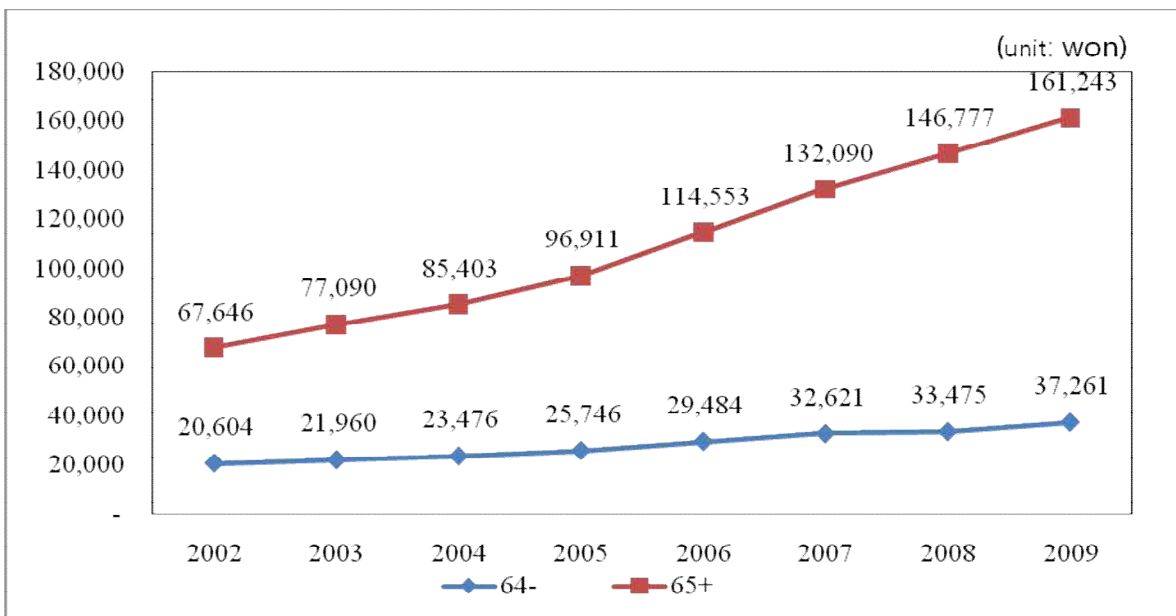
(Unit: billion won, %)

year	Revenue				Expenditure					Balance	Accumulated Balance
	Total	Contributions	government subsidies	Others	Total	Benefits	Administrative Costs	Others			
2000	9,828 (10.5)	7,229	1,553	1,046	10,744 (11.8)	9,286	696	763	- 916	- 916	
2001	11,928 (21.4)	8,856	2,625	447	14,106 (31.3)	13,196	629	281	- 2,177	-3,094	
2002	14,305 (19.9)	10,928	3,014	364	14,798 (4.9)	13,824	598	377	- 493	- 3,587	
2003	17,467 (22.1)	13,741	3,424	302	15,972 (7.9)	14,893	634	445	1,494	- 2,093	
2004	19,408 (11.1)	15,579	3,483	347	17,330 (8.5)	16,265	693	372	2,079	- 14	
2005	21,091 (8.7)	16,928	3,695	469	19,980 (15.3)	18,394	759	827	1,111	1,097	
2006	23,263 (10.3)	18,811	3,836	616	22,818 (14.2)	21,588	779	451	445	1,542	
2007	26,050 (12.0)	21,729	3,672	649	25,889 (13.5)	24,560	720	609	161	1,704	
2008	29,787 (14.3)	24,973	4,026	788	28,273 (9.2)	26,654	672	947	1,514	3,217	
2009	31,500 (5.8)	26,166	4,683	651	31,189 (10.3)	30,041	660	489	311	3,529	

* Increase rates are in parenthesis.

Source: National Health Insurance Corporation, by year

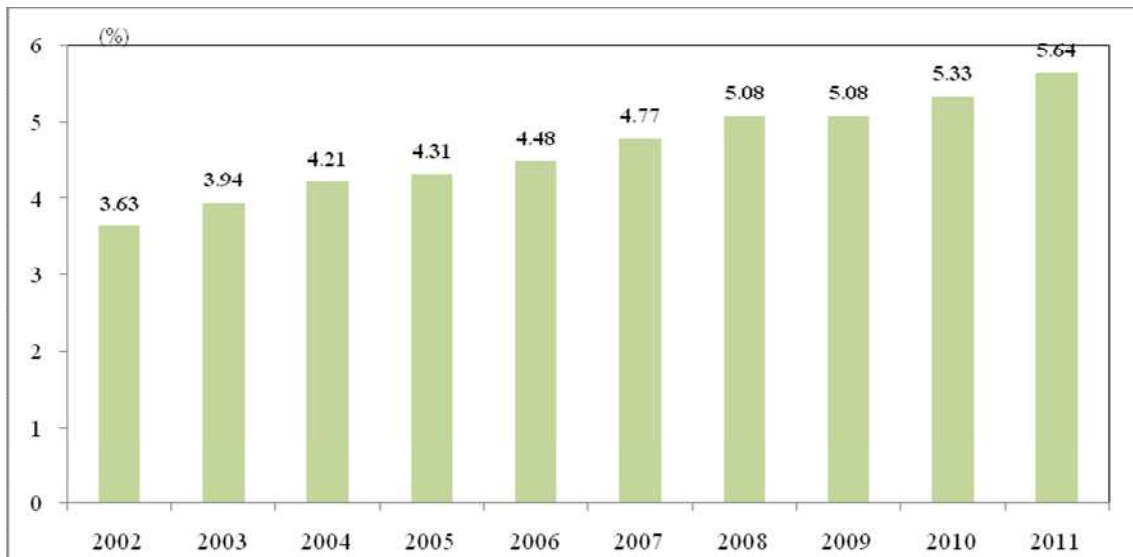
Figure 4: Monthly Benefits per capita



Source: National Health Insurance Corporation, 2010.

On the discretionary side, there has been continuous effort to enhance the government’s role in health protection in response to people’s growing expectations for better and cheaper health services. During the last decade, the Korean government tried to alleviate financial burden due to patient’s heavy out-of-pocket payments by expanding the range of covered services of the NHI, and by introducing ceilings on co-payments. As a result, the public share in total health spending rose from 50.4% in 2003 to 55.3% in 2009 (OECD health database). The enhanced government’s involvement put additional pressure on the increase in the NHI’s benefit payments. To finance the growing outlays of NHI, the government increased contribution rates almost every year during the last decade, and consequently, the contribution rate for the workplace-insured rose by more than 2 percentage points during the period of 2002 to 2011(Figure 5).

Figure 5: NHI Contribution Rates for Workplace-insured

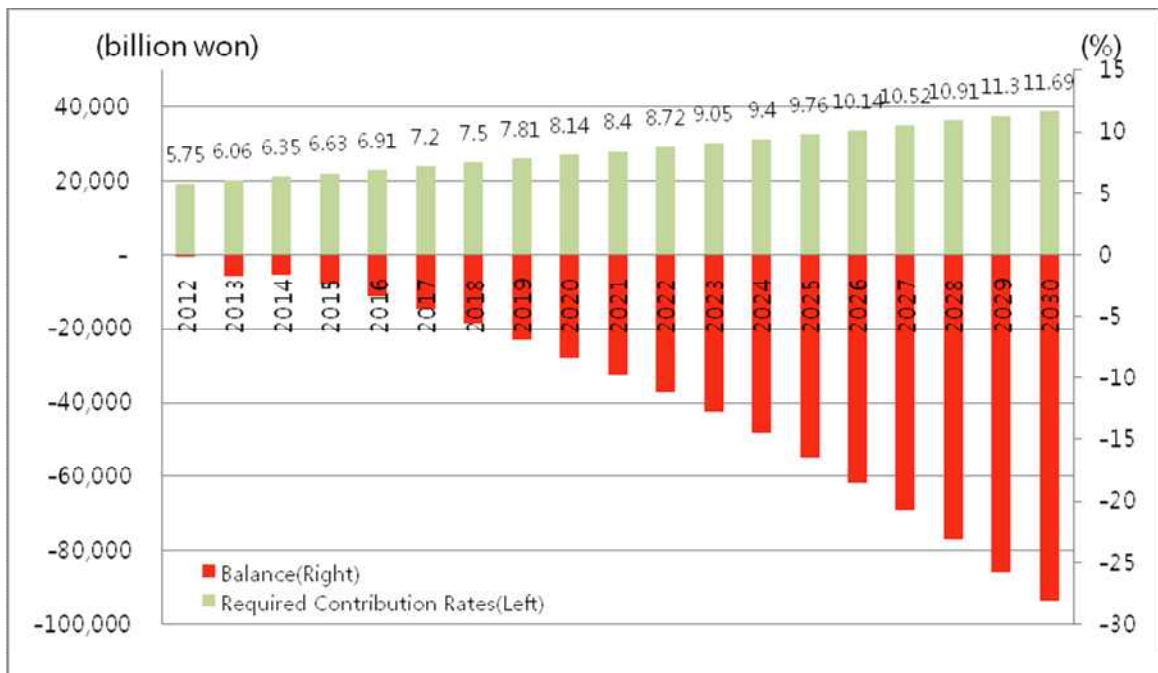


Source: National Health Insurance Corporation, by year

Despite the continuous increase in contribution rates, the current rates are still far too low to finance the rapidly rising health spending of NHI in the years to come. According to the most recent financial projection results by the NHI (2010), the deficit of NHI is expected to increase exponentially in the near future even if we assume that medical fees are kept constant in real terms (Figure 6). Considering that medical fees,

which were set too low initially, are likely to increase faster than the inflation rate due to technological progress and that the range of covered services of NHI will continue to be extended, the future of NHI's financial situation is expected to be more pessimistic than the projections of NHIC. The NHIC also predicts that substantial increase in contribution rate will be inevitable to balance the system financially; the contribution rate for workplace-insured should be more than doubled for the next two decades, from 5.64% in 2011 to 11.69% in 2030.

Figure 6: Financial Projection Results of NHIC



* Medical fees in nominal terms are assumed to increase 2.5% per annum, in line with the consumer price index (CPI).
 Source: National Health Insurance Corporation, 2010.

3.2. Long-Term Care Insurance System

With rapid population aging, growing female participation in the labor market and longer life expectancy, the demand for long-term care service has continuously increased. In particular, the demand for formal involvement of the government for long-term care is growing as the informal family network, which was responsible for

providing healthcare support to the elderly, traditionally, is weakening with the increase in number of elderly with difficulties performing daily living activities due to old age or geriatric disease that needs long-term treatment and continuous aid. In order to alleviate these burdens, Korea introduced the Long-term Care Insurance system (LTCI) in July 2008. It aims to promote senior citizens' health and life stabilization as well as increasing the quality of people's lives by mitigating the physical, mental and financial burden of care on family members. The LTCI has various forms of benefits to support the insured including giving baths, providing meals, cooking, laundry, cleaning, nursing, medical treatment aid, or consultation on care.

The LTCI provides coverage for all those aged over sixty-five, as well as for younger people with geriatric disease like Alzheimer's disease, stroke, etc. As the LTCI is targeted to cover only aged-related care needs, individuals need to obtain prior approval for services. There are three levels of functional status/limitations, each with different benefits. The LTCI benefits provide largely service benefits; in-home services and institutional services. In-home services have home-visit care, home-visit bathing, home-visit nursing, day & night care, short-term respite care and welfare equipment services. The type of payment varies from pay per hour for home care, pay per visit for home nursing and baths, pay per day for institutional care and day & night care. Cash benefits are also provided in exceptional cases as a form of family care cash benefits, exceptional care cash benefits and nursing expense of LTC Hospitals (NHIC, 2009).

In July 2008, at the time of inception, the LTCI covered only 2.9% of the total elderly, around 140 thousand persons, but the coverage has rapidly expanded to 4.3% at the end of 2008, 5.4% in 2009, and 5.6% in April 2010 (Table 12). Among LTCI beneficiaries so far, the very old, aged 80 and over, occupies 45%, and more than a half of the total beneficiaries are stricken with Alzheimer's disease and stroke. The current coverage of LTCI is very narrow mainly due to the fact that the LTCI provides basic minimum benefit coverage to the most needy. Despite the tight restrictions on eligibility condition, the number of elderly who applied, or are qualified, for LTCI benefits are rapidly on the rise (more than doubled in two years) as the public's awareness of the availability of LTCI increases.

Table 12: The Expansion of LTCI

(Units: person, %)

Category	July 2008	Dec. 2008	Dec. 2009	April 2010
No. of elderly who applied for benefits (Percent of total elderly)	271,298 (5.4)	376,032 (7.5)	596,235 (11.3)	663,741 (12.3)
No. of elderly found eligible for benefits (Percent of total elderly)	146,643 (2.9)	214,480 (4.3)	286,907 (5.4)	304,826 (5.6)
No. of elderly receiving benefits (Percent of total elderly)	70,542 (1.4)	147,801 (3.0)	228,980 (4.3)	236,004 (4.4)

Source: National Health Insurance Corporation, LTCI Statistic, 2010

The central agency, the NHIC, currently manages both the NHI program and the LTCI program to gain economies of scale. Like the NHI program, the LTCI program is financed by premium payments, government subsidy and co-payment from patients. The LTCI premium payments account for 60~65% of the total revenue, while 20% of the revenue comes from subsidies of the central and local governments. To prevent moral hazard or the excessive overuse of LTCI and to encourage home-based care, the co-payment rate was set at relatively high level of 20% of cost for institutional care and 15% for in-home service. The contribution rate of LTCI is determined as a fixed percentage of the NHI contribution, with the two contributions collected together. The contribution rate of LTCI was initially set at the level of 4.05% of NHI premium in 2008. However, with the soaring demand for LTCI, the government had to increase the rate to 4.78% in 2009 and to 6.55% in 2010, thereby adding the financial burden of the insured who are already suffering from the increase in the NHI premium.

Since its inception, the LTCI expenditure is increasing at a rapid pace. In 2008, the total expenditure of LTCI accounted for merely 0.05% of GDP (Table 13). However, it went up to 0.23% of GDP by the first half of 2010 as people became more aware of the LTCI program. In 2010, the expenditure for in-home service recipients occupied more than a half of the total expenditure. However, the share of institutional service is expected to grow fast with the expansion of long-term care facilities. As the long-term care cost per LTCI beneficiary is higher for institutional care compared to that of in-home care service, the institutionalization trend is expected to put additional pressure on the expenditure growth in the near future.

Table 13: Financial Status on LTCI

(Units: billion won, %)

Year	Expenditure			Revenue		
	Total (% of GDP)	In-home	Institution	Total	Contribution	Subsidy
2008	554.9 (0.05)	164.6	262.9	869.0	477.0	386.8
2009	1,908.5 (0.18)	985.0	754.5	2,084.9	1,200.0	864.4
2010 1 st half	1,304.6 (0.23)	761.0	543.6	1,610.8	905.7	332.3

Source: National Health Insurance Corporation, *LTCI Statistic*, 2010.

Even though the balance of LTCI is positive now, the future of LTCI's financial situation is expected to be pessimistic. The demand for LTCI, which was expected low initially, are likely to increase faster due to demographic factors; the population share of those aged 80 and over, who are the major target group of LTCI, will increase from 2% in 2010 to 14% in 2010 (NSO, 2006). As LTCI services should be given to the elderly with long-term disease or having difficulties in their daily life activities, the needs of LTC services should increase accordingly. The decrease in the number of families with parents and females, due to extended participation to the labor market, will also contribute to the increase in demand for institutional care. OECD (Martins and de la Maisonneuve, 2006) predicted that the public expenditure on the LTCI will increase to high as 3 to 4% of GDP by 2050, which is larger than the OECD average of 2.4~3.3%.

4. Policy Implications

4.1. Policy Implications for National Pension

As observed in section 2.1, despite the extended coverage of the National Pension Scheme in 1999, actually more than a third of target individuals have failed to pay the contribution, including the insured that are exempted from contribution or delinquents. Furthermore, considering that the majority of these insured individuals are the poor or low income class experiencing employment insecurity, such low participation in the

system might lead the working age poverty to the old-age poverty. The participation rate in the National Pension might be expected to increase at a gradual pace as the public awareness on the National Pension is matured and the government's capability of gathering accurate information on the incomes of insured individuals improves. However, in order to prevent the spread of the old-age poverty in advance through promptly enhancing the participation rate, it is necessary to draw active measures that aim to improve the participation of non-regular, low-income workers or self-employed, small-business persons as well as to strengthen the administrative capability to manage the insured.

There are a number of alternatives to consider as a way to tighten the loophole in the participation rate of the National Pension. For instance, some people in academia and politics claim the need for introducing a tax-financed and universal basic pension, which is however a radical reform that accompanies a fundamental change in the existing institutional framework. Moreover, since the rapidly aging population would require a huge fiscal expenditure, any approach should be highly cautioned regarding the feasibility and sustainability of the system. On the other hand, the government has actively reviewed another alternative to increase the participation rate in the existing system, which is subsidizing a part of contribution of payments for the low-income class. It would be more effective to remove possible causes of the old-age poverty beforehand than to increase fiscal assistance afterwards. To put it another way, prior to considering a measure to provide the old-age income assistance for those beyond the coverage of the National Pension, it would be appropriate to first draw up a measure that actually encourages the low-income class to participate in the National Pension. To that end, it would be necessary to actively consider allocating a part of fiscal resources for ex-post old-age income support to non-regular workers or self-employed, small-business individuals for lessening their burden on contribution.

As discussed in section 2.2, 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). The amendment to the National Pension Act implemented in 2008 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. Policy directions for enhancing financial sustainability that should be pursued in the future are as follows.

First, 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 2008 seem to have limitations both in terms of policy goal. 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.

Second, a 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. 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 (Moon 2009). 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.

Third, 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.

Lastly, 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. Therefore, measures to strengthen the expertise, independency, and accountability of the fund's management are needed to enhance the efficiency of pension fund management. 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 Committee” which is composed of experts in the private sector. (Moon et al. 2007), 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.

4.2. Policy implications for healthcare system

The biggest challenge facing Korea’s healthcare system is the rapid increase in health expenditure, mainly driven by population aging and by increasing medical costs per elderly. Unless measures are taken to contain the expenditure hike effectively, contribution rates are projected to be more than doubled within the next two decades to maintain NHI’s financial balance. On the other hand, the current healthcare system still relies heavily on private financing and the government’s role of risk protection needs to be strengthened so as to reduce the burden of excessive out-of-pocket payments by patients. However the extended insurance benefits will put additional pressure on NHI’s finance inevitably. Hence, the current healthcare system in Korea is in a dilemmatic situation, and faces challenges including sustainable financing, strengthening health protection and administrative efficiency.

To make the system more sustainable in the long term, the NHI should try to secure more financial resources by increasing insurance contributions at a reasonable level and raising additional funds from other sources like government subsidy. But this alone cannot solve the long-term financial instability unless it is accompanied by measures to contain the growth of health spending. Some of the reform measures for increasing efficiency of Korea’s healthcare system that needs immediate attention are as follows.

First, the provider's payment mechanism needs to be redesigned to give better incentives for a more efficient use of medical resources. The healthcare costs are currently reimbursed through fee-for-service for all medical services and referral levels. However, the fee-for-service payment system often provides incentives for physicians to increase unnecessary healthcare treatments and to substitute uninsured medical services for insured ones. The evidence of supply-induced over treatments can be found in many cases. For instance, the number of consultation per physician in Korea was 3 times higher than the OECD average in 2008, the highest in OECD member countries (Cheong, 2010). Also, the average hospital stay in Korea was 10.6 days in 2008, which is much longer than the OECD average of 6.6 days (Jones, 2010). Hence, changing the payment system away from the fee-for-service is essential for more efficient use of medical resources and containing medical costs. A prospective payment system based on Diagnosis Related Group (DRG), which pays a fixed amount depending on the diagnosis, and a capitation payment per enrolled patient should be introduced and expanded in the near future.⁷

Second, policy measures on drug pricing are urgently needed to contain growing pharmaceutical expenditure. In 2009, drug expenditures accounted for 26.6% of total NHI spending, which is much higher than those of other countries (NHIC, 2010). One of the reasons for high drug expenditure is that the NHI's reimbursement price for generic drugs is maintained artificially at a high level in order to protect small pharmaceutical companies. The price of generic drugs is currently set at 68% of the original drugs, which is too high by international standards. The high generic drug prices, however, result in prevalent illegal rebates or rent-seeking behaviors from the drug makers which negatively affect the NHI finance. The current reimbursement method of actual transaction price has also blocked price competition among pharmaceutical companies, and thereby undermines the efficiency in the drug market. Hence, it is essential to reform the drug pricing system of NHI towards facilitating

⁷ In January 2002, a pilot project for the new payment mechanism introduced the DRG system for seven diagnostic groups to pay medical institutions only for inpatient care services. However, the government failed to extend the DRG system and making it mandatory because of strong opposition from physicians (Jones, 2010).

competition in the generic drug market in order to contain pharmaceutical expenditure, and to transform the basis of reimbursement method into average, rather than actual, transaction price (Yoon, 2008).

Last but not least, the newly launched LTCI program can help enhance allocative efficiency of scarce health resources and contain health cost through the relocation of long-term care patients from expensive acute-care hospitals to cheaper chronic beds in long-term care facilities or nursing care in residential homes. However, sufficient LTC facilities with adequate and affordable care services are not yet available. Hence, in the short-run, the policy priority should be given to the supply-side such as the expansion of LTC facilities and training of necessary care personnel. In doing so, however, an accurate demand forecast is needed so as not lead to over-supplied facility capacity and over-institutionalization of the elderly. In the longer-term, cost containment of the LTCI through demand control will be an imperative issue as population aging puts growing pressure on LTCI finance. The demand for LTCI will increase further since the government has a plan to gradually expand long-term care coverage to the elderly with less serious limitations in their activities of daily living (NHIC, 2009). To combat this situation, de-institutionalization will be essential. As the amount of benefits for institution-based vs. home-based care can affect the decision making of the needy elderly, the incentive scheme should be designed to encourage family-based or community-based care, rather than institutional care, and improve the coordination of medical care and long-term care (Kwon, 2005).

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