Long-term Projection of **Social Expenditure** in Korea

KIHASA Korea Institute for Health and Social Affairs

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Foreword

Korea has seen in recent years the maturity of its public pension plans grow and its childcare programs and basic old-age pension expand in coverage. Despite such an impressive growth, these and other social programs still leave much to be desired in their capacity to withstand socioeconomic shocks. Many have therefore agreed on the need for coming to grips with the future of Korea's social security as a whole, in what proportions its many components will constitute it, and what the implications of all this would be for decision-makers.

Implemented in January 2013, the Framework Act on Social Security provides that social security projections be conducted every other year. The government accordingly set up a subcommittee under the Social Security Committee to steer the project. Since then, the Center for Social Security Financial Projections, part of the Korea Institute for Health and Social Affairs (KIHASA), has been tasked with working-level responsibilities concerning the project. This report is intended primarily to introduce experts in other OECD countries to the methods employed in making projections for Korea's social security and to stimulate the exchange of ideas for their improvement. The KIHASA team based their own analyses and international comparisons on the official projection outcomes that were released by the government at the end of 2013.

The preparation and writing of this report was led by Dr. Jongwook Won, with the participation of Dr. Hwayeon Shin and Messrs. Taeeun Kim, Insu Chang and Yohan Choi. My gratitude goes to Dr. Jai-joon Hur of the Korea Labor Institute and Dr. Mina Kang of the Korea Research Institute for Human Settlements, for their contribution to the substance of the book. I also thank the members of the Subcommittee for Social Security Financial Projections for sharing their insights, certain of which have been reflected in this report.

Byongho Tchoe, President
Korea Institute for Health and Social Affairs
September, 2014

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Research Background, Objectives and Structure

1. Research background
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1 Research Background, Objectives and Structure

Ⅰ. Research background

The health and welfare portion of the central government budget of the Republic of Korea exceeded KRW 100 trillion for the first time in 2014. The increase is primarily contributable to programs for dealing with the declining birth rate and the rapidly aging population in Korea, and on enhancing customized welfare services for vulnerable groups and promoting the self-sufficiency of welfare beneficiaries via increased employment-related services.

The social security system in Korea has grown at an explosive rate in recent years. Signs of growth include changed childcare policies, the adoption of the basic old age pension system, and the increasing maturity of the public pension systems. Nevertheless, policymakers are still criticized for what is perceived as the failure of the Korean social security system to provide for all in need, and for the system's inability to cope with major socioeconomic risks, such as the global economic crisis.

Social security expenditure in Korea mainly concerns social insurances with defined benefits. Demand for these services is expected to increase all the more dramatically in the coming years, as the National Pension system continues to mature. Korean policymakers, therefore, now face two main tasks: ensuring the fiscal sustainability of social security expenditure, and enhancing the quality and efficiency of related services and institutions.

As part of efforts to ensure the fiscal sustainability of social expenditure, the Korean government regularly publishes long-term projections for various specific public pensions, including the National Pension and the Government Employees Pension. While numerous research organizations and independent researchers have, over the years, put forth their own long-term projections for social security overall, the government had published no official findings in this regard, only launching the process for estimating long-term fiscal projections for social security in 2014.

The amended Framework Act on Social Security (Article 5, Paragraph 4) and its Enforcement Ordinance (Article 2), effective since January 2013, obligate the Korean government to provide projections for social security spending every two years (starting in 2013). The government thus established the Subcommittee for Fiscal Projection of Social Security as a part of the Social Security Committee to facilitate processes in this regard, and the Center for Fiscal Projection of Social Security at the Korea Institute for Health and Social Affairs (KIHASA) to develop a proper budget projection model.

This study examines the fiscal projection system, the categories and periods of projections, projection methods, and other institutional variables involved in long-term projections for social expenditure in Korea until 2060. The aim is to review and analyze current long-term fiscal projection methods with a view to developing a more reliable budget projection model. This study will also provide long-term predictions on the level and structure of Korea's social security expenditure based on the given budget projections to hopefully spur further discussions on the growth and development of social security in Korea.

Ⅱ. Research objectives and structure

The two main objectives of this study are: 1) to develop a long-term budget projection model with which to examine the long-term fiscal sustainability of social security policies; and 2) to produce actual budget projections by postulating main variables and reviewing projection methods. The authors review and analyze projection methods to discern those that can most effectively identify relevant variables and reflect the interactions among those variables. Based on the authors' budget projections, long-term predictions on the level and structure of social expenditure in Korea, and comparisons with OECD counterparts, the authors provide recommendations for improving the Korean social security system.

The Korean government established the Subcommittee for Fiscal Projection of Social Security as part of the Social Security Committee to conduct social security budget projections under the newly amended Framework Act on Social Security. The Subcommittee, consisting of officials from related departments and civilian experts,[1] organizes discussions on the methods and outcomes of fiscal projections. The Korean government, moreover, founded the Center for Fiscal Projection of Social Security at KIHASA to assist the Subcommittee in its efforts to develop a fiscal projection model and in other details of the projection process.

Chapter 2 identifies and discusses the categories of social expenditure, as conceived for long-term fiscal projection purposes. The categories of social expenditure are defined according to the Organization for Economic Cooperation and Development (OECD)'s Social Expenditure Database (SOCX), making possible international comparisons. The chapter therefore discusses the criteria used by the OECD SOCX, and their application in the Korean case.

Chapter 3 provides an overview of the main variables, including the projection period, and demographic and macroeconomic variables, as well as methods and models of projection.

Chapters 4 and 5, respectively, review the selected budget projection method and the main variables of social insurance expenditure and general fiscal expenditure. As related government departments attempted long-term projections for social security expenditure previously, Chapter 4 focuses more on projection methods. Chapter 5, on the other hand, reviews the models and methods of projection developed by the Center for Fiscal Projection of Social Security (CFPSS), focusing on the main variables.

Chapters 6 and 7 analyze the findings of the social security budget projection model, and discuss future policymaking tasks based on international comparisons of

1) Organized in May 2013, the Subcommittee will be active for 11 months, until the end of March 2014. It consists of nine government officials and 12 civilian experts (including the Chairperson), as well as administrators. The Subcommittee's administrators include the head of the Division of Social Services Policy at the MOHW, which serves as the secretariat for the Social Security Committee, as well as the head of the Center for Fiscal Projection of Social Security at KIHASA.

social expenditure levels worldwide. Assuming that the current social security system will remain intact, the authors provide long-term projections for social security and general fiscal expenditures, and discuss implications for the future level and structure of social security spending in Korea through international comparisons undertaken based on the policymaking categories of the OECD SOCX.

2

Chapter

OECD SOCX Categories

1. OECD SOCX
2. Application of OECD SOCX to the 2013 Korean government budget
3. Limits of applying OECD SOCX classification to Korea, and future tasks

2 OECD SOCX Categories

I. OECD SOCX [2)]

Though the OECD SOCX's budget classification guidelines are based on firm principles, these principles are rather abstract for direct application to practical details. In other words, the guidelines in themselves cannot qualify as practical standards for categorization, and therefore require user (subjective) interpretation for application in reality. In particular, the SOCX's criteria for classifying expense accounts as personnel expenses (or labor costs), operating costs, and other such items of administrative costs are especially vague. As a result, the authors of this study applied their judgment, adopting SOCX categorizations in consideration of the particularities of the Korean budget (as of 2013). This chapter discusses in detail the SOCX's categorization criteria, and limits and issues in terms of the application of such categorization in Korea.

1. OECD SOCX overview

A. Background

The SOCX was first introduced in 1996 to provide the indicators necessary for social policy analysis. Though the SOCX's accounting analysis framework for social expenditure and revenue is modeled after the System of National Accounts (SNA), it overcomes the inability of the SNA to provide detailed information on social transfers and in-kind benefits (Varley 1986; Oxley et al. 1990). The SOCX includes data on social expenditure programs for the 34 member states of the OECD and enables international comparison of social spending policies.

2) Excerpted from Goh Gyeong-hwan et. al. (2011). *Comparison of Korea's Social Expenditure Projections for 2010 and the Healthcare Expenditure of Other OECD countries*.

B. Principles

OECD social expenditure data is determined based on several firm, albeit somewhat abstract, principles.[3] First, the OECD defines social expenditure(SOCX) as:

"The provision by public and private institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer" (SOCX manual)

In other words, social expenditure includes benefits and financial contributions provided by organizations only; inter-household transfers, even for social or public purposes, are not regarded as social spending.

Second, social expenditure includes three types of social benefits: cash benefits, such as pension benefits, childcare leave benefits, social assistance, etc.; in-kind benefits, in the form of care services for children, the elderly, and people with disabilities; and tax breaks for social purposes (TBSP), such as tax exemptions for the survived family members of accident victims and contributions to private health insurances. In categorizing social benefits thus, the SOCX veers from the traditional way of dividing social benefits between cash transfers and in-kind benefits, and indicates that tax expenditure largely consists of cash benefits. It is for this reason that the OECD distinguishes between cash and in-kind benefits on its official web site.

Third, social expenditure should satisfy two important criteria to qualify as such. First, the benefits it supports must serve one or more social purpose. Second, the programs for distributing such benefits must support the redistribution of benefits among individuals and/or enlist their obligatory participation. In other words, these benefits

3) The SOCX Manual (Adema, W., P. Fron and M. Ladaique (2011). *Is the European Welfare State Really More Expensive?: Indicators on Social Spending, 1980-2012; and a Manual to the OECD Social Expenditure Database (SOCX)*. OECD Social, Employment and Migration Working Papers, No. 124, OECD Publishing.)

must be transferred not as a result of direct market transactions, but according to the risk profile of each individual beneficiary. Accordingly, the provision of social services, social insurances, and social assistance always has implications for the redistribution of wealth among households, since the revenue for these benefits must come from taxes in general and from social security contributions from all qualified members in a given group of the population.

Fourth, the SOCX does not include any of the usual administrative costs. Social benefits incur costs in varying amounts depending on the types of channels of provision used. Such costs, however, do not directly benefit beneficiaries. Exceptionally, however, the SOCX includes administrative costs in expenditures for active labor market programs (ALMPs), childcare services, and public healthcare.[4] Wages for medical practitioners, employment center employees, and childcare service providers are included under administrative costs, and also directly bear upon the services that beneficiaries actually receive. Employment center employees, for instance, directly counsel and advise job candidates who visit their centers. Childcare service providers take care of and educate children. Medical practitioners similarly interact with and serve patients.

Fifth, capital investments are included under social expenditure on an accruals basis. For example, let us suppose that a government spent USD 1,000,000 (including interests) over four years on building a long-term care home or hospital. In such a case, USD 250,000 should be included in the yearly social expenditure projections or accounting for four years.

Sixth, while repayable loans in general are not included in social expenditure, the amounts of interests on public loans with preferential interest rates may be included. This rule first appeared in the revised version of the SOCX in 2011. It states:

> "According to the traditional definition of social security, simultaneous and mutual arrangements between individuals are not included in the concept of

4) The original data can be found in the OECD's Education Database, Labor Market Policy Database, and Health Database.

intervention. An intervention where the beneficiary incurs upon him or herself the simultaneous responsibility to provide something of an equal value in exchange for the benefit he or she receives should be properly excluded from the scope of social security. Therefore, for example, loans for the purchase of furniture and the interests thereupon are not eligible for social security benefits, because such loans are provided when the borrower promises to pay the fixed interests and repay the total amounts of the principals. If, however, a loan has been provided free of interest or at a preferential interest rate for social security-related purposes, the amount of the interests accruing on that loan or the amount of interests deducted may be included in social benefits" (Eurostat, 2008: SOCX manual)

2. Composition of social expenditure classification of the OECD SOCX

A. Expenditure statistics

Social expenditure, as defined by the OECD, is categorized as follows: public social expenditure, mandatory private social expenditure, voluntary private social expenditure, gross social expenditure, and net social expenditure. The distinction between public and private types of social expenditure depends on whether it is a public organization or a private organization that controls the flow of the financial resources involved in that expenditure.

Public social expenditure, consisting of social insurances and social assistance, is under government control. Sickness benefits, which are provided out of a revenue pool comprised of employer/employee contributions, form a typical example.

Private social expenditure can be further divided into two categories. Mandatory private social expenditure includes social benefits obligated to be provided under law but via private-sector channels. These benefits include sickness benefits paid directly by the employer to the employee, as well as the cumulative amounts of mandatory contributions made to private insurance funds. Voluntary private social expenditure, on the other hand, refers to the redistribution of resources among households. It in-

cludes benefits provided by NGOs and other private-sector sources.

Social expenditure is the sum of public and mandatory-private types of social expenditure. Gross social expenditure, however, also includes the voluntary-private kind on top of these two. Gross social expenditure is thus broader in scope and includes more diverse social benefit sources than conventional social expenditure. The items included in gross expenditure, however, represent amounts before tax, and as such may fail to offer an accurate measure of the public welfare benefits provided. To overcome this shortcoming, the OECD introduced net social expenditure, which subtracts TBSP from gross social expenditure.

B. Social policy areas

The SOCX classifies social benefit policies into nine groups: old age, survivors, incapacity, health, family, active labor markets, unemployment, housing, and other social benefits.

① Old age

Old age benefits include all cash transfers (including lump-sum payments) related to old age pensions. Cash benefits for the elderly are meant to guarantee a certain level of income for people who have retired from the workforce, have reached the statutory retirement age, and have made mandatory contributions to the old age pension. These benefits also include early retirement pension benefits, which are paid to beneficiaries before they reach the statutory retirement age. Given current labor market conditions worldwide, however, early retirees are usually classified as unemployed, not retirees.

Old age pensions also provide benefits for beneficiaries' dependents, as well as in-kind benefits and services for the elderly, including care, rehabilitation, and domestic help. These benefits also extend to the maintenance costs of homes or facilities catering to the elderly, such as group homes for seniors. To maintain compatibility with SNA93, the SOCX places old age pension benefits for government employees that draw upon voluntarily raised funds under the category of voluntary private social expenditure.

② Survivors

Survivor benefits include cash and in-kind benefits from public sources provided to people who have lost their spouses or providers. Cash benefits for survivors include benefits for beneficiaries as well as allowances and other types of cash payments for their dependents. In-kind benefits include funeral expenses and other related services.

③ Incapacity

Incapacity-related benefits are paid to those who are incapable of participating fully in the workforce due to congenital or accident-related disability. Expenditure on other sickness daily allowances, special allowances, and disability pensions, as well as workers' compensations, are included in the category of benefits for occupational injury and diseases. Cash benefits provided for beneficiaries who have lost part of their income temporarily due to health reasons are included in the category of other sickness daily allowances. Benefits provided for beneficiaries' dependent children due to disease or injury are included in family cash benefits, not in incapacity-related benefits. Public cash benefits for healthcare, similarly, fall into the category of health benefits. Incapacity-related benefits also include in-kind expenditure for care, rehabilitation, and domestic help services.

④ Health

Social statistics on health policies can be found in the OECD Health Database.[5] Health benefits include all items of public expenditure in the public healthcare sector, including the costs of personalized services, collective healthcare services, and investments. Health benefits also include expenditure for care services for hospitalized patients, as well as for supplementary medical services and drugs. However, it does not include the amounts of loans repaid by public healthcare institutions. Cash benefits for disease are included in the category of sickness benefits. Among volun-

5) The OECD Health Database includes as one of its components the health accounts system.

tary private health benefits, only the benefits paid to the beneficiaries of private medical plans (usually eligible for tax or employment-related benefits) are included in health benefits. The recent reform of health and social policies sought to limit the overlapping calculation of expenditure on long-term care services. The improvement of health accounting systems has led to greater accuracy in long-term care service expenditure data.

⑤ Family

Family benefits pertain to provisions to support families, and include the costs of raising children and providing for beneficiaries' dependents. Cash benefits in this category include family allowances, spending on pre- and post-partum as well as parental leaves, and other cash payments. In-kind benefits include the costs of care and domestic help services, and other related cash benefits. In an effort to make a more refined comparison of the family support provided with respect to early childhood education and care among different countries, the authors of this study identified the differences in obligatory school ages across countries. In a number of Nordic states, for example, children are required to enter primary school at age seven, and preschool at age six. The reliability of international comparison can be ensured only when we exclude children at the latter age, by estimating the cost of educating and caring for six-year-old children based on the total amount of education expenditure and the available demographic data. On the other hand, children in Australia, New Zealand, and England enter primary school at age five (or the mandatory preschool system in the case of England). In cases like these, expenditure on educating and caring for five-year-old children should be included in our spending projections.

⑥ Active labor market programs (ALMPs)

ALMPs include all public expenditure (except the part spent on vocational education) that goes toward improving the job competency and suitability of beneficiaries in search of employment, and the income-earning ability of beneficiaries already employed. Expenditures in this regard include the costs of all special employment

programs for young people, including labor market training, etc., that assist in their finding jobs upon graduation, as well as the costs of labor market programs that promote the employment of unemployed people (other than the young or people with disabilities), and special programs for the employment of people with disabilities.

⑦ Unemployment

Unemployment benefits include all cash benefits provided for people who do not have a job. These include redundancy pay for people who have been dismissed through no fault of their own but due to the insolvency or restructuring of their workplaces; and public cash benefits provided for beneficiaries who have not yet reached the statutory retirement age but who have lost their job due to the labor market situation or policy.

⑧ Housing

Housing benefits include cash benefits that are meant to help beneficiaries pay rents or otherwise secure housing arrangements, as well as public subsidies earmarked to help residents in rented housing (or homeowners living in their own properties, in the case of Norway) with living expenses. These particularly concern benefits that have been traditionally regarded as in-kind (SNA 1993 – D. 6331), but are classified as cash benefits. The SOCX considers direct cash housing benefits for the elderly, people with disabilities, and the underprivileged as part of other categories of benefits (1.2.1, 3.2.1, and 9.2.2).

The main issue with respect to housing expense data is the question of whether to include other types of benefits—i.e., mortgage loans at preferential rates, capital subsidies for construction, and other forms of tacit subsidies for residential facilities—in the category. The construction of certain types of housing, even if conducted for profit-making purposes, can serve a social purpose if it wholly or mainly benefits low-income households. Nevertheless, the absence of international consensus on a method for including, measuring, and projecting expenditure on these benefits has so far prevented their inclusion in the SOCX's housing benefits category.

⑨ Other social policy areas

Other social policy benefits refer to benefits that are provided temporarily for beneficiaries who fail to meet the qualifications for benefits of the other eight categories, or for beneficiaries who require additional help on top of the benefits they are receiving from one or more of the other eight categories. This category includes benefits provided for immigrants, North Korean defectors, and indigenous peoples, and all other social benefits not included in the other categories.

〈Table 2-1〉 Social policy areas of the OECD SOCX

1. Old age
   - Cash benefits
     - Pension
     - Early retirement pension
     - Other cash benefits
   - Benefits in kind
     - Residential care / Home-help services
     - Other benefits in kind

2. Survivors
   - Cash benefits
     - Pension
     - Other cash benefits
   - Benefits in kind
     - Funeral expenses
     - Other benefits in kind

3. Incapacity -related benefits
   - Cash benefits
     - Disability pension
     - Pension (occupational injury and disease)
     - Paid sick leaves (occupational injury and disease)
     - Paid sick leaves (other sickness daily allowances)
     - Other cash benefits
   - Benefits in kind
     - Residential care / Home-help services
     - rehabilitation services
     - Other benefits in kind

4. Health
   - Benefits in kind

5. Family
   - Cash benefits
     - Family allowances
     - Maternity and parental leaves
     - Other cash benefits
   - Benefits in kind
     - Day care / Home-help services
     - Other benefits in kind

6. Active labor market programs
   - Employment service and administration
   - Labor market training
   - Youth measures
   - Subsided employment
   - Employment measures for disabled

7. Unemployment
   - Cash benefits
     - Unemployment compensation / severance pay
     - Early retirement for labor market reasons
   - Benefits in kind

8. Housing
   - Benefits in kind
     - Housing assistance
     - Other benefits in kind

9. Other social policy areas
   - Cash benefits
     - Income maintenance
     - Other cash benefits
   - Benefits in kind
     - Social assistance
     - Other benefits in kind

Note: The number of statistical items in The SOCX Manual is 58, while it is 62 in the iLibrary on the OECD's website. (The SOCX Manual lacks the cash benefits of Category No. 4, two items in Category No. 6, and the cash benefits of Category 8 that are included in the iLibrary.)

Source: The SOCX Manual (Adema, W., P. Fron and M. Ladaique (2011). *Is the European Welfare State Really More Expensive?: Indicators on Social Spending, 1980-2012; and a Manual to the OECD Social Expenditure Database (SOCX)*. OECD Social, Employment and Migration Working Papers, No. 124, OECD Publishing.)

Ⅱ. Application of OECD SOCX to the 2013 Korean government budget

The SOCX is divided, as seen above, into nine areas of social expenditure policy: old age, survivor, incapacity, health, family, ALMP, unemployment, housing, and other social policy benefits. This study divides the 2013 budget of the Korean government into these nine areas, and examines the major programs or items of each area.

〈Table 2-2〉 Application of OECD SOCX to the 2013 Korean budget of General Government

(Unit: KRW 1 million, %)

Policy area	2013 budget (central and local combined)	
	Amount	Proportion
Total	128	100.0
1. Old age	31	24.2
2. Survivor	2	1.9
3. Incapacity	7	5.5
4. Health	56	43.8
5. Family	11	8.6
6. ALMP	8	6.6
7. Unemployment	4	3.0
8. Housing	-	-
9. Other	8	6.4

Note: KRW 2.4 trillion in local government project expenses has been omitted because it was impossible to include in any category.

① Old age

Old age benefits in Korea include basic old age pensions, retirement pensions, and other old age benefits provided by social insurances. Examples include National Pension benefits and lump-sum refunds for the elderly; retirement benefits and allowances from pensions for government employees, private school teachers, and special post office employees; and retirement benefits, lump-sum refunds, and allowances from the military pension. This category also includes in-kind benefits such as care services for the elderly, support for elderly organizations and shelters, support for new funerary facilities and memorial installations, and the provision of specialized medical care for especially vulnerable elderly groups, etc.

〈Table 2-3〉 Old age programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
MOHW	Basic old age support and pension benefits	Basic old age pension benefits	4,312,539
	Elderly shelters	Local elderly shelters (personnel, operating, and maintenance costs) and three specialized institutions	6,624
	Support for elderly organizations	Heating and air-conditioning cost support at local seniors' centers	91,586
	Medical care for vulnerable groups	Elderly health management by National Health Promotion Fund (prevention and management of dementia, blindness, and other age-related conditions)	27,714
	Care services	General support centers for seniors living alone	1,000
	Funerary facilities	Creation of new funerary facilities	61,760
MOSF		Shelters for abused seniors	1,714
MND	Pension	Retirement pension	1,851,930
		Survivor pension (part of retirement pension)	235,803
		Retirement allowance	251,286
NPS	Pension	Old age pension	10,740,000
POPA	Pension	Retirement pension	16,965
GEPS	Pension	Retirement benefits and pension	9,526,600
TP	Pension	Retirement pension	1,689,200

Note: Ministry of Health & Welfare (MOHW); Ministry of Strategy and Finance (MOSF); Ministry of National Defense (MND); National Pension Service (NPS); Special Post Office Pension Agency(POPA); Government Employees Pension Service(GEPS); Teachers' Pension(TP)

② Survivors

Survivor benefits from social insurances include survivor pension benefits, the lump-sum death benefit, and allowances for patriots and veterans. Examples include: the survivor pension and lump-sum death benefit from the National Pension; the survivor pension, lump-sum death benefit, lump-sum survivor benefit, and death condolence money from the Special Post Office Pension; and the survivor pension, lump-sum survivor benefit, survivor benefits, other benefits, death condolence money, and nonscheduled compensations and allowances for patriots and veterans from the Military Pension.

〈Table 2-4〉 Survivor programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
MND	Pension	Death condolence money	12,553
		Survivor pension	76,743
		Lump-sum survivor benefit	1,080
		Survivor and other benefits	1,495
MPVA	Pension	Other allowances (For nursing, life adjustment, the descendants of Korean War patriots, military honorees, and napalm victims)	963,937
		Nonscheduled compensations (Lump-sum death benefit, death compensations for soldiers, funeral compensation benefits, permanent returnee settlement allowances)	18,648
NPS	Pension	Lump-sum death benefit	31,700
		Survivor pension	1,378,400
POPA	Pension	Death condolence money	405
		Survivor pension	988
		Lump-sum pension benefits for survivors	87
		Lump-sum survivor benefits	162

Note: Ministry of National Defense (MND); Ministry of Patriots and Veterans Affairs (MPVA); National Pension Service (NPS); Special Post Office Pension Agency(POPA)

③ Incapacity

Incapacity-related benefits in Korea are provided for those who are incapable of earning income through employment due to disability. These benefits include disability pension and workers' compensation benefits from social insurances, as well as the disability-related pension from the MOHW. More specifically, they include: disability pension and lump-sum disability payments from the National Pension; workers' compensation benefits from the Government Employees and Private School Teachers' pensions; the wounded soldier pension from the Military Pension; the leave-of-absence, disability, nursing, and occupational rehabilitation allowances, survivor benefits, funeral service expenses, injuries and disease pension, and black lung pension from the Workers' Compensation Insurances. In addition, the disability pension, disability allowances, subsidies for enhancing the functions of disability organizations, subsidies for low-income people with disabilities, support for disability organizations, medical benefits for people with disabilities, optional welfare services

for people with disabilities, support for the social participation of women with disabilities, support for the education of children with disabilities, and disability benefits for patriots and veterans all fall under this category.

〈Table 2-5〉 Incapacity-related programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
MOHW	Income Guarantee for People with Disabilities	Disability pension	511,328
		Disability allowance	160,041
	Support for Low-income People with Disabilities	Scholarships for the children of people with disabilities	2,015
		Subsidies for assistance devices	5,159
		Support for the autonomous living of people with severe disabilities	9,735
		Childbearing support for women with disabilities	1,307
	Medical Support for People with Disabilities	Medical support for people with disabilities	84,193
	Expansion of Residential Facilities for People with Disabilities	Infrastructure enhancements to improve accessibility in and provide more tailored homes for people with disabilities	48,441
	Optional Welfare	Support for families with children living with disabilities	9,312
	Occupational Rehabilitation	Preference for the purchase of goods produced by people with severe disabilities	3,135
	Support for Disability Organizations	Convenience enhancements for people with disabilities	300
	Support for Life Stability	Housing repair for rural people with disabilities	3,800
MOL	Workers' Compensation Insurance	Nursing benefits	58,952
		Injury and sickness pension	176,415
		Survivor benefits	442,975
		Funeral expenses	23,666
		Disability benefits	1,750,916
		Leave-of-absence benefits	691,529
		Rehabilitation benefits	18,702
		Black lung pension (newly introduced in 2012)	97,054
MND	Pension	Wounded soldier pension	21,916
MOGEF	Support for the Social Participation of Women with Disabilities	Support for the social participation of women with disabilities	1,694
MOSF		Entrepreneurial support services customized for low-income people with disabilities	3,000
MOE		Support for the education of students with disabilities	12,109
MVPA	Pension	Benefits for injured soldiers and police officers	2,280,371
NPS	Pension	Disability pension	336,800
GEPS	Pension	Workers' and disability compensations	110,500
TP	Pension	Workers' compensation	37,300

Note: Ministry of Health & Welfare (MOHW); Ministry of Labor (MOL); Ministry of National Defense (MND); Ministry of Gender Equality and Family (MOGEF); Ministry of Strategy and Finance (MOSF); Ministry of Education (MOE); Ministry of Patriots and Veterans Affairs (MVPA); National Pension Service (NPS); Government Employees Pension Service(GEPS); Teachers' Pension(TP)

④ Health

Health benefits include National Health Insurance (NHI)—by far the largest and most important item in terms of social insurance expenditure—as well as Long-term Care Insurance for the Elderly (LTCIE), medicaid benefits in the National Basic Livelihood Security, medical care benefits in the Workers' Compensation Insurance (WCI), collective health expenditure, fixed capital formation, and support for the underprivileged (improvements of psychiatric institutions). The fixed capital formation projection assumes, which stood at KRW 1.4 trillion in 2010 according to Korean Statistical Information Service (KOSIS) statistics on the construction industry realized amount, will grow alongside the economic growth rate. The public expenditure on health and lottery funds were projected on the basis of the 2013 budget.

〈Table 2-6〉 Health programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Type / program	Expense items	Expenditure (central+local)
NHI	NHI benefits	41,659,600
LTCIE	LTCIE benefits	3,674,000
Medicaid	Medicaid benefits (estimate)	5,516,684
fixed capital formation (government)	fixed capital formation (estimate)	1,520,360
Public expenditure on health (collective health expenditure by government)		1,917,133
WCI	Medical care benefits (including pharmacy data)	810,900
MOSF (Lottery Commission) support for the underprivileged	Improvements of psychiatric institutions	2,500
Local government project	Healthcare	734,000
Local government project	Food and drug safety	26,900
Total		55,862,077

Note: National Health Insurance (NHI); Long-term Care Insurance for the Elderly (LTCIE); Workers' compensation insurance (WCL); Ministry of Strategy and Finance (MOSF)

⑤ Family

Family benefits include general fiscal expenditure items that require special projection models, such as benefits provided to support infant and toddler care and the education of children in low-income households and in rural areas, as well as special programs for children and youth including those to prevent abduction and sexual assault and for locating missing children etc. Care for adopted children and extracurricular activities are also included here, as are benefits provided to support women and families, including those for single parents, multi-cultural families, low-income families, etc.

〈Table 2-7〉 Family programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
MOHW	Adoption Support	Childcare allowances(support for families adopting children)	27,679
	Dream Start Support	Support for projects catering to children and teens	116,594
	Extracurricular Activities (after-school daycare)	Operating expenses for local children's information centers	185,452
		Support for special-purpose and local-based children's centers	5,297
		Support for Saturday programs	8,834
	Financial Support for Infant and Toddler Care	Financial support for infant and toddler care	5,091,565
		Extended hours care support	68,603
		Part-time childcare services (trial program)	3,800
		Free childcare services for children with disabilities	81,423
	Family Childcare Support	Childcare allowances (ages 0 to 2)	1,551,082
		Childcare allowances (ages 3 to 5)	255,202
		Childcare allowances (preschool children in rural areas)	21,279
		Childcare allowances (preschool children with disabilities)	7,750
	Nursery Support (Daycare services)	Public and incorporated nurseries	588,625
		Nurseries specializing in infants and toddlers	120,610
		After-school program instructors	2,114
		Extended-hours caregivers and instructors	100,994

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
		Substitute teacher labor costs	6,787
		Nurseries specializing in children with disabilities	70,114
		Teachers trained for educating children with and without disabilities	21,397
MOGEF	Youth Organization Support	Support for youth training facilities	9,124
	Youth Experience Programs	Support for youth activities	20,828
	Youth Protection against Sexual Abuse	Creation and operation of youth sex education centers	7,964
	Youth Social Security	Youth social security (not including programs for adults accompanying youth)	19,573
	Multicultural Family Support	Support for immigrant women victims of violence	8,752
	Single-Parent Support	Childcare allowance	81,240
MOE		Preschool education allowance (ages 3 to 5, Nuri Common Curriculum)	2,645,982
		After-school daycare classes	332,272
MAF	Promotion of Farmer and Fisherperson Welfare	Improvement of childcare conditions and environments in rural areas (e.g., facilities, allowances, care services)	59,375

Note: Ministry of Health & Welfare (MOHW); Ministry of Gender Equality and Family (MOGEF); Ministry of Education (MOE); Ministry of Agriculture and Forestry (MAF)

⑥ ALMPs

The ALMP policy mainly concerns programs run by the unemployment insurance fund, such as mother-child support programs, employment security programs, occupational competency programs and others operated as part of the general or special accounts. Six main general accounts programs are included in the following budget projection: the workplace program, the occupational training program, the employment service program, the employment subsidy program, the entrepreneurial program, and the income support program.

〈Table 2-8〉 ALMP programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies[1)]	Expense items	Expenditure[2)] (central+local)
MOL	Fostering social enterprises	174,224
	Support for local job creation	63,991
	Support for Employment Success Package projects	166,147
	Mother-child support	656,986
	Support for fostering employment	47,662
	Employment-promoting subsidies	39,057
	Fostering social enterprises	11,200
	Substitute payments	266,813
	Overdue wage clearance loans for employers	5,000
MAFRA	Urban-rural exchange program (appointing village secretaries-general)	5,481
	Farmer education and training	21,296
	Support for return to rural areas	6,705
	Direct payments for management transfers	62,420
MOF	Creation and maintenance of forests	321,384
MOHW	Rehabilitation (work rehabilitation) programs	508,529
	Support for activities by people with disabilities	538,467
	Elderly care services (local government subsidies)	160,144
	After-school care services (appointing daycare instructors)	73,582
	Support for elderly employment	454,764
	Support for elderly employment (in Jeju, Seoul, and metropolitan cities)	3,044
MOGEF	Childcare support	103,462
	Support for women seeking reentry into the workforce	18,083
	Support for after-school (extracurricular) activities for teens	29,142

Note: 1) Ministry of Labor (MOL); Ministry of Agriculture, Food, and Rural Affairs (MAFRA); Ministry of Forestry (MOF); Ministry of Health & Welfare (MOHW); Ministry of Gender Equality and Family (MOGEF)

2) The amounts and proportions of local government shares in government-subsidized programs are based on MOL statistics.

⑦ Unemployment

Unemployment benefits draw upon the fiscal resources of unemployment insurance.

〈Table 2-9〉 Unemployment programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
MOL	Unemployment Insurance	Unemployment benefits (jobseekers' allowances, self-employed)	3,540,351
		Unemployment benefits (support for early job search)	232,513
		Unemployment benefits (sickness benefits)	11,400
		Unemployment benefits (Support for job search in metropolitan areas)	296

Note: Ministry of Labor (MOL)

⑧ Housing

The 2013 budget of the Republic of Korea(central government) included no specific programs or items corresponding to housing benefits. However, housing benefits that had formerly been counted as part of other social policy benefits gained their own category in 2014 with the Korean government's adoption of the customized-benefit approach in the National Basic Livelihood Security.

⑨ Other social policy areas

Minimum living benefits, emergency welfare benefits, support for rehabilitation and autonomy, support for the welfare of the homeless, earned income tax credit (EITC) work-and-study scholarships, military and special post office pensions (disaster relief allowances), support for Koreans in Sakhalin, rental housing support, support for the improvement of aged rental housing, policy support for North Korean defectors, compensations for damaged private properties, cultural vouchers, and others not included in the foregoing eight categories fall under the other social policy benefits category.

〈Table 2-10〉 Other social programs based on the Korean government budget(2013)

(Unit: KRW 1 million)

Ministry/ Public agencies	Program	Expense items	Expenditure (central+local)
MOHW	Basic Livelihood Security	Living wages	3,260,969
		Housing benefits	716,586
		Childbirth and funeral benefits	27,679
		Education allowances	163,013
		Government grain discounts	97,205
	Support for autonomous living	Local autonomy centers (including youth autonomy programs)	57,813
		Autonomy allowances	48,897
		Support for beneficiaries with work capacities	54,596
	Emergency relief	Emergency living support	28,590
		Emergency medical care support	47,441
		Emergency housing support	2,140
MOSF	Tax Expenditure	EITC Work and Study Scholarship	682,100
MOLIT	Rental housing support	Investment in public rental housing	621,179
		Investment in permanent public rental housing	439,735
		Investment in purchasing and renting multi-household residences	199,750
		Current subsidies for 'jeonse' rental	37,917
	Improvement of aged public rental housing	Support for renewal projects	110,000
		Improvement of aged public rental housing	85,000
	Support for improving living conditions (loans)	Improvement of living environments	4,500
		Financial support for vulnerable groups	2,600
MOGEF	Support for protecting women and children against abuse	Living support and commemoration projects for women forced into sexual slavery under the Japanese colonial regime	1,967
MND	Pension	Disaster relief allowance	21
MOU	Policy support for North Korean defectors	Financial support for the settlement of North Korean defectors (except KRW 17.4 for supporting their employment)	66,620
MCST		Cultural vouchers	42,493
		Tourism vouchers	10,143
		Sports vouchers	15,120
NEMA		Support for restoring damaged private properties	20,000
POPA	Pension	Disaster relief allowance	8

Note: Ministry of Health & Welfare (MOHW); Ministry of Strategy and Finance (MOSF); Ministry of Land, Infrastructure, and Transport (MOLIT); Ministry of Gender Equality and Family (MOGEF); Ministry of National Defense (MND); Ministry of Unification (MOU); Ministry of Culture, Sports, and Tourism (MCST); National Emergency Management Agency (NEMA); Special Post Office Pension Agency (POPA)

Ⅲ. Limits of applying OECD SOCX classification to Korea, and future tasks

1. Problems with SOCX categories

A. Benefits with social purposes

The SOCX counts only benefits with social purposes as items of public social expenditure, thereby excluding a significant number of spending items involving national (or governmental) accounts for health and social protection as well as central government spending on social welfare and health, including the public health insurances.

(1) SOCX excludes administrative costs

In general, the SOCX excludes administrative costs (i.e., the part of the expenditure that is not directly spent on beneficiaries, such as the costs of registering, making payments to, collecting contributions from, monitoring and managing the receipt of, evaluating, and reinsuring beneficiaries). However, it makes exceptions for the administrative costs of some in-kind benefits, such as the ALMPs, services for children, and public healthcare.

Applying the administrative cost exclusion principle to Korea would eliminate labor and administrative costs (including KRW 1.8 billion for after-receipt management of benefits and KRW 723.1 billion for operating the National Pension) from Korea's social expenditure.[6)]

6) The basic expenses (including labor costs) involved in Korea's social expenditure include, for example, the KRW 207.6 billion in labor costs for the social welfare programs of the MOHW; the KRW 295 billion for the labor programs of the MOL; the KRW 79.4 billion for the veterans programs of the MPVA; the KRW 23.9 billion for childcare, family, and women's programs of the MOGEF; and the KRW 96.3 billion for food safety programs of the MFDS.

(2) SOCX generally excludes loans

The SOCX generally excludes loans from the amount of social expenditure (except for the amount of expenditure provided at preferential interest rates). However, in the case of Korea, this would eliminate KRW 15.8 trillion (91 percent of the housing budget) provided in loans (for purchasing or renting houses or units of public housing), KRW 3.1 trillion in public pensions (including loans to support living stability), and KRW 7.2 billion provided as living support loans for the underprivileged.

(3) Programs that are not exactly "benefits"

Items and programs of spending, such as the KRW 1.1 billion spent on supporting the World Population Congress, the KRW 4.7 billion spent on enhancing public awareness of the dangers of an aging society with a low birth rate, the KRW 3.1 billion spent on supporting cooperation among women's organizations, and the money earmarked for official development assistance (ODA) and the R&D projects of the World Health Organization (WHO) and other international organizations are not exactly "benefits," and thus should be excluded from the social expenditure according to the SOCX.

(4) Programs counted as "benefits"

According to the SOCX, the entire amount of money spent on NHI and LTCIE should be included in social expenditure, irrespective of their sources (i.e. whether from the National Treasury or not). In Korea's case, KRW 41.8 trillion (approximately 12 percent of the central government's total expenditure) would still be excluded. Furthermore, the amount of money spent on the education of children age 5 or under would have to be included.

B. Category of ALMPs

In the area of labor programs (KRW 13.8906 trillion), it is difficult to classify most of the programs as specifically ALMPs, aside from the cases of jobseekers' allowances (KRW 3.5375 trillion), early reemployment allowances (KRW 232.5 billion),

and mother-child protection support (KRW 657 billion). It is unclear whether some of the programs specifically targeting vulnerable groups, such as local community employment programs (KRW 53.7 billion from the central government treasury), employment programs for people with disabilities (KRW 41.5 billion) and the elderly (KRW 238.4 billion), and quality employment programs for women (KRW 10.6) should count as ALMPs. The SOCX, furthermore, fails to provide sufficient data and information on Korea's ALMP policy.

C. Programs incompatible with any category

The KRW 1.6 trillion programs for vulnerable groups listed in the Korean government's Digital Budgeting and Accounting System (dBrain) include all types of beneficiaries, and as such it takes a significant amount of time and effort to sort them into the nine categories of the SOCX. Examples of dBrain programs include:

- local (community-based) employment services;
- children's protective services; after-school daycare services;
- programs for the disabled; programs for the elderly;
- financing programs for the underprivileged; subsidy programs to assist rural people with disabilities in renewing housing leases (KRW 1.9 billion);
- programs to support the costs of labor, operation, maintenance, research, and rehabilitation at the National Rehabilitation Center;
- support for low-income people with disabilities (KRW 13.2 billion);
- financial assistance programs for the education of the children of people with disabilities;
- financial assistance programs for the purchase of assistance devices for people with disabilities;
- financial support programs for the living expenses of people with severe disabilities;
- financial support programs for women with disabilities; support for the management costs of programs for people with disabilities;

- support for antidiscrimination public campaigns for people with disabilities;
- support for the rental of driving practice fields and driver education expenses for people with disabilities; and support for the custodian program for adults with disabilities.

The Korean government's "dBrain" is mainly divided into two sectors (social welfare and healthcare), 12 categories, 76 programs, 539 unit projects, and 1,357 sub-unit projects. Because its sorting criteria tends to be too specific, a number of programs and projects end up being excluded.

2. Limits of the SOCX categories

Though the OECD SOCX's budget projection guidelines are based on firm principles, these principles are rather abstract for direct application to practical details. In other words, the guidelines in themselves cannot qualify as practical standards for categorization, and therefore require user (subjective) interpretation for application in reality. In particular, the SOCX's criteria for classifying expense accounts as personnel expenses (or labor costs), operating costs, and other such items of administrative costs are especially vague.

A. Definition

The SOCX defines social expenditure as the "provision by public (and private) institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare." This definition does not include benefits and financial contributions in the forms of direct payments, particular goods or services, or individual contracts or transfers. Because this definition of social expenditure includes benefits provided by institutions only, it does not count inter-household transfers of goods or cash for social purposes.

B. Requirement of social purpose

According to the SOCX's definition, a benefit must be provided to serve at least one social purpose, and a benefit program must facilitate the redistribution of wealth among individuals and/or be based on individual mandatory participation.

(1) Administrative cost

Because the expenses generated by the channel or system of providing benefits do not directly benefit beneficiaries, the SOCX does not include these administrative costs in its definition of social expenditure. However, administrative costs that in and of themselves constitute in-kind benefits, such as ALMPs, childcare services, and healthcare, are included under social expenditure. These categorizations are based on terms defined by the OECD in its labor market policy, education, and health databases.

(2) Capital investment

Capital investment, in the form of construction costs and the like, is included in social expenditure on an accruals basis. For example, let us suppose that a government spent USD 1,000,000 (including interest) over four years on building a long-term care home or a hospital. In such a case, USD 250,000 should be included in the yearly social expenditure projections or accounting for four years.

(3) Interest expenditure

While repayable loans in general are not included in social expenditure, the amounts of interests on public loans with preferential interest rates may be included, according to the rule revision made in 2011. Therefore, the amounts of interests deducted on loans provided free of interests or at lower interest rates for social purposes can be counted as social benefits.

3. Application to the Korean social expenditure case

A. Principles of categorization

SOCX categories can be applied, more or less, to the Korean social expenditure case. As for items of social expenditure whose categories are unclear, we should consider in each case how their categorization could impact them quantitatively or qualitatively.

B. Specific application

As for the administrative costs of cash benefits, operating and labor costs in the provision of those benefits do not necessarily have a quantitative or qualitative impact on the benefits. Accordingly, cash benefits should be counted without including administrative costs. On the contrary, administrative costs bear directly upon the quantitative or qualitative aspects of in-kind benefits or services, and therefore should be included when counting in-kind benefits.

Capital accumulations, similarly, directly affect neither the quantitative nor the qualitative aspects of cash benefits, and are therefore not included. They are included, however, in the case of in-kind benefits. Research and development (R&D) costs are included in neither cash benefits nor in-kind ones, as they have no direct impact, quantitatively or qualitatively, on the benefits provided. One-time events also rarely affect the quantitative or qualitative aspects of cash and in-kind benefits.

The authors in this study also made decisions on whether to include each given item of the cost or expenditure under either cash benefits or in-kind ones based on whether those items affected the quantitative or qualitative aspects of the benefits provided.

(1) Inclusion of administrative costs

The SOCX, in principle, excludes administrative costs (the overhead costs of social

welfare programs in general, such as those involved in beneficiary registration, benefit administration, contribution collection, control, survey and evaluation, etc.) from social expenditure. However, it makes exceptions for such programs as ALMPs, childcare services, public healthcare programs, etc., so as to ensure statistical consistency according to the definition of social benefits as directly provided benefits for social purposes. The SOCX, moreover, also includes administrative costs in a limited number of in-kind benefits where the administrative costs directly affect or decide the creation and delivery of such benefits (Articles 90 and 91, SOCX Manual).

Social expenditure in Korea consists of quite various and complex types of projects and programs divided into subunits. The nature and characteristics of each of these programs or their subunits must be considered before deciding whether they should be included in social expenditure. Applying the general SOCX rule may help make this task easier, as it provides a useful guideline on whether to include administrative and overhead costs in counting in-kind or cash benefits as part of social expenditure. The costs of directly providing benefits for beneficiaries should be included in the case of in-kind benefits only, while the administrative costs pertaining to R&D, education, advertising, special events, and public awareness campaigns should not.

For instance, the administrative costs of operating cash benefits, such as basic old age pensions, old age pension centers, and the like, as well as contributions to international organizations like UN Women, the Korea Scout Association, and to other forms of international development and cooperation should not be counted as part of social expenditure. On the other hand, the administrative costs of providing in-kind benefits, via local senior centers and the like, and contributions to public awareness campaigns, educational programs, and to special events on social issues such as women and children's rights, gender equality, anti-discrimination, and protection of children and teens against sexual violence, should be categorized as part of public social expenditure.

(2) Categorization of ALMPs

Given the nature of welfare policies, numerous programs require the involvement of multiple government departments or public institutions simultaneously. The inclusion of these programs in one category or another depends on which criteria of categorization is adopted. Employment programs form a representative example. An employment program for seniors, for instance, can be viewed as either a program intended to guarantee certain levels of income in old age, or as an ALMP. An employment program catering to people with disabilities may similarly be viewed as both a program of incapacity-related benefits and an ALMP.

As public demand for employment policies continues to grow worldwide, numerous new additions have been made to the list of programs in the ALMP database. It has become necessary, therefore, to reorganize the database according to the fundamental purposes and objectives of these employment-promoting programs. Close cooperation is necessary to prevent the overlapping or omission of certain programs. On a deeper level, more discussion on the principles and criteria of categorization should be encouraged.

Furthermore, it is necessary to consider whether to include ALMPs subsidized by central governments in the category of local revenue-based programs. Due to the limits in practice, local spending on ALMPs has not been counted as part of social expenditure according to the SOCX's definition until now. Because local revenue-based programs are included in categories other than ALMPs, it is necessary to revisit this category in order to ensure statistical consistency and reliability.

3

Chapter

Expenditure Projection Method

3 Expenditure Projection Method

Ⅰ. Overview

1. Demographic and macroeconomic variables

Mid- to long-term projections for social expenditure require the identification of proper demographic and macroeconomic variables pertaining to social insurance and general fiscal programs. The expenditure projections presented herein are therefore based on some common demographic and macroeconomic assumptions drawn from statistics released by Statistics Korea and the Long-Term Expenditure Forecasting Council (LTEFC) and applied across all categories. More specifically, the demographic variables for this study refer to the size of the median-income family population by year, age, and gender between 2010 and 2060 as identified in the future population projections of Statistics Korea. Macroeconomic variables, on the other hand, refer to yearly economic growth rates, real interest rates, wage growth rates, and the like with respect to median-income families between 2010 and 2060 as projected by the LTEFC.

2. Expenditure projection period

The budget projections herein pertain to the period until 2060, and consider the existing literature and compatibility with LTEFC reports.

3. Expenditure projection hypotheses

Social insurance programs include the four public pensions (including the National

Pension), LTCIE, Workers' Compensation Insurance, and unemployment insurance. The authors of this study adopted the expenditure projection methods of all the involved institutions as well as the statistical findings of the LTEFC. The general fiscal programs subjected to this study include programs of public assistance, social compensation, and social services with operations dependent on central and local government budgets. In making budget projections, the authors assumed that budget-related institutions in existence as of 2013 would remain intact until 2060, while also taking into account the Customized National Basic Livelihood Security benefits that are to be entered into force in October 2014.

4. Categories of social expenditure

In making expenditure projections, the authors of this study first made projections on the budgets of social insurance and general fiscal programs that fit into the nine categories of the OECD SOCX.[7] Government social expenditure programs and their categories were decided according to the Subcommittee for Fiscal Projection of Social Security.

First, of the nine categories of the OECD SOCX, ALMPs and health programs already have databases independent of the SOCX, and as such merit prior consideration ahead of the programs of other categories. Health programs include health/long-term care/Workers' Compensation Insurances, medical benefits, fixed healthcare funds, and collective healthcare costs. The projections for collective healthcare costs, in particular, are based on the OECD Health Database of 2011.[8]

Second, the matter of whether or not to include administration costs in social expenditure can only be decided based on more specific criteria or standards, which this study found based on a reinterpretation of the SOCX Manual and in consultations with Willem

7) See Section 2.(2) for a description of the nine categories of welfare policy spending. Also, see Table 3-1 for the OECD's categories of public expenditure as applied to the 2013 budget (KRW 130 trillion).
8) The System of Health Accounts is a part of the OECD Health Database.

Adema, a senior economist in charge of the OECD social expenditure database.[9] The SOCX generally excludes administration costs. However, regarding the provision of services such as under ALMP, childcare services and public expenditure on health, the administration costs are included in the totals (SOCX Manual, pp. 90, 91). The administrative costs involved in administration of benefits are included in the case of in-kind benefits and excluded in the case of cash benefits. However, costs not directly related to the administration of benefits, such as public education, advertising, special events, awareness campaigns, international development and cooperation (including ODA), and R&D, are excluded.

Third, it is also necessary to develop criteria by which it can be decided whether a given program falls into the category of ALMPs or some other category, and other criteria by which it can be determined whether to include local expenditure in overall public social expenditure. While the authors of this study maintain the original SOCX list of ALMPs, they plan to revisit the list in discussions with the MOSF, the MOL, and other relevant government ministries and departments regarding the categorization of government-subsidized employment programs next year. As for local expenditure, local programs subsidized by the central government have so far been omitted from expenditure projections in reports to the OECD, but the authors of this study decided to include those programs in their long-term budget projections. As a result, they drew upon the MOL's fiscal and expenditure reports on local government shares in central-government subsidized programs.

Ⅱ. Expenditure projection method

Korea's 2013 budget and programs for public social expenditure (KRW 130 trillion) are categorized as shown in the table below. The categorization of social insurance

9) The meeting was held on October 31, 2013, at KIHASA.

and non-contributory basic old age pension benefits are based on the statistical findings of the LTEFC, while the general fiscal programs are subdivided into long-term benefits, childcare policy benefits, disability policy benefits, elderly care services, and other benefits prior to any projections.

〈Table 3-1〉 Social expenditure categories in Korea's 2013 general government budget

(Unit: KRW 1 trillion, %)

Category		central and local combined	
		Amount	Proportion
Total	(A) + (B)	130.0	100.0
(A) Social insurance and non-contributory old age pension benefits	NHI	41.7	32.1
	National Pension	12.8	9.8
	Basic old age pension	4.3	3.3
	LTCIE	3.7	2.8
	Unemployment insurance	6.1	4.7
	Military pension	2.7	2.1
	Private School Teachers' Pension	2.0	1.5
	Workers' compensation insurance	4.1	3.2
	Government Employees Pension	10.9	8.4
Subtotal		88.3	67.9
(B) General fiscal programs (tax-financed)	Childcare policy benefits	9.6	7.4
	Disability policy benefits	1.2	0.9
	Elderly care services	0.2	0.2
	National Basic Livelihood Security	9.8	7.5
	ALMPs	5.4	4.2
	Public rental housing	1.5	1.2
	MPVA compensations and allowances	3.3	2.5
	EITC	0.7	0.5
	Other fiscal expenses	7.6	5.8
	Locally financed welfare programs	2.4	1.8
Subtotal		41.7	32.1

1. Eight major social insurances and the basic old age pension, based on the LTEFC

Each involved government ministry or public agencies publishes its social spending projections (based on the statistical findings of the LTEFC) and the models and methods utilized to arrive at those projections for inter-ministry/department perusal.

The MOSF and related public agencies handling social insurances request budget projections for the nine OECD categories of public social expenditure, and compile those projections to arrive at long-term fiscal prospects. However, as the Private School Teachers' Pension and the Government Employees Pension belong to public social expenditure as defined by the OECD, the LTEFC has not produced any projections on these pensions; as such, the Budget Projection Center is responsible for such projections.

2. Tax-financed social expenditure, excluding the non-contributory basic old age pension

(1) Structured projection models for tax-financed social expenditure

Projections for tax-financed social expenditure are based on the assumption that current institutions and programs will remain intact throughout the projection period, and the economy will continue to grow. Expenditure projection models for childcare and disability policy benefits (long-term in nature) take into account such future trends as the declining birth rate, the aging population, and the slow growth of the economy. The prior values of program variables used in the projection models and methods were drawn from reviews by the Subcommittee for Fiscal Projection of Social Security.

〈Table 3-2〉 Structured Projection Models main program-related variables of major social programs

Modeling by social programs		Program-related variables
Elderly care services		Number of beneficiaries, service user rates, average amounts of financial support and labor costs, increases in the amounts of financial support and labor costs
Disability policy benefits	Disability pension	Incidence of disability, benefit receipt ratio, rates of increase in benefits, amounts of basic old age pension benefits
	Disability benefits	Incidence of disability, benefit receipt ratio, rates of increase in benefits
	Activity support	Benefit receipt ratio, rates of increase in benefits
Childcare policy benefits	Financial assistance (Nuri Curriculum)	Facility access rates, average amounts of and rates of increase in assistance provided
	Family allowance	Facility non-access rates, average amounts of and rates of increase in allowance provided
	Childcare services	Facility access rates, numbers of caregivers/instructors, average amounts of and rates of increase in labor costs
	Childcare support	Service access rates, average amounts of and rates of increase in subsidies and labor costs

(2) Simple projection models for other social programs

Other social programs of tax-financed expenditure without specific projection models include the National Basic Livelihood Security, ALMPs, allowances for patriots and veterans, EITC, public rental housing, welfare programs of local government, and other fiscal spending programs. The table below lists the projection details and the different rates of increase applied to these programs.

〈Table 3-3〉 Simple projections of other social programs

Program	Projection details
National Basic Livelihood Security	○ The three-month (October to December) spending projection included in the 2014 budget, reflecting the new customized benefit system to be applied as of October 2014, was converted into yearly spending projections. - The number of beneficiaries was assumed to remain constant even after adoption of the new system in the estimation of future rates of increase in the amounts of benefits (in consideration of anticipated economic growth rates).
ALMPs	○ Projections on Unemployment Insurance Fund (UIF) programs for employment security and Occupational Competency Development programs were based on the LTEFC's projections. ○ The authors newly estimated spending increases for programs other than UIF programs. - Number of jobs: based on the2013 budget of KRW 3.136 trillion (including local government shares) - Occupational training: 5% of total spending on ALMPs (excluding spending on UIF programs) - Employment services: based on the assumption of continued increase, but subject to change in the late 2020s or so according to changes in economic growth rates - Employment subsidies: based on wage growth rates - Entrepreneurial support: based on economic growth rates - Amounts of unemployment income: based on the characteristics of different programs, including the number of beneficiaries and the unit cost for each
Benefits for patriots and veterans	○ Compensations - Assumed rate of increase: 5.99% per year on average (2009 to 2013) ○ Allowances - Based on the assumption that there will be no new beneficiaries, and that the number of beneficiaries will gradually decrease over time throughout the projection period - Rate of increase per capita: 3.49% per year on average (2011 to 2013)
EITC	○ MOSF's mid-term fiscal plan (2014 to 2017) - Rates of increase in the amounts provided to be based on economic growth rates beginning in 2018
Public rental housing	○ Takes into account the KRW 1.5 trillion in the 2013 budget for public rental housing and the improvement of aged housing. ○ The number of public housing units is based on Statistics Korea projections on the number of households until 2035. - Assuming that the numbers of households and members per household will begin to decline in and after 2035, but the costs of reconstructing and improving aged public housing will increase - Rates of increase in the amounts of spending: based on current inflation rates
Local welfare programs	○ Rates of increase: based on rates of increase in general fiscal expenditure (economic growth rates)
Other social spending	○ Rates of increase: based on rates of increase in general fiscal expenditure (economic growth rates)

(3) Projections for local government matching shares in central government-subsidized programs

The authors of this study assumed in their projections on local government's matching financial shares in central government-subsidized programs the constancy of the

current rate of central government subsidization throughout projection period (as of 2013).[10] In particular, statistical findings from the MOL were used to estimate local shares in central government-subsidized ALMPs.

(4) Assumptions on rates of increase in tax-financed benefits (aside from the non-contributory basic old age pension) and related labor costs

The Subcommittee for Fiscal Projection of Social Security proposed diverse bases on which to make assumptions on rates of increase in benefits and related labor costs for the budget projection drafts, with these including inflation rates, inflation rates plus the real economic growth rate (or ½ or 1/3 thereof), wage growth rates, and others.

Initially, inflation rates appeared to be fitting candidates, particularly with respect to long-term preservation of consumer prices. However, the rate at which the labor cost (i.e., the minimum wage) related with ALMPs and other programs have increased over the last 10 years has exceeded the inflation rate. Moreover, the problem of consistency may arise if one were to apply the inflation rate to only certain parts of the projection period and not to others.

Second, one may apply wage growth rates to estimate the rates at which the future amounts of benefits will increase. However, in the case of Korea, the wage growth rate always hovers above the inflation rate and the inflation rate plus the real economic growth rate. Therefore, applying wage growth rates may lead to overestimation and with it long-term cumulative effects. Even so, the models for certain pensions and other programs, including the National Pension, have wage growth rates built in, a fact that may favor the application of wage growth rates to projections for other programs for the sake of consistency. Each separate social benefit program has its own set of criteria. It is therefore necessary to review wage growth rates and long-term trends, and apply such reviews to each program.

10) Central government subsidization rates for the 2013 budget were applied to long-term projections for local government's matching shares in central government-subsidized programs. Thus the projections herein may differ from the projections of local shares put forward by different government ministries and departments in the 2013 budget.

Third, assigning the same weight given the economic growth rate to the wage growth rate effectively eliminates capital shares. It was therefore suggested that the balance between the labor coefficient and the capital coefficient be defined and kept at a rational level. Others, however, cited the European example, where states began their budget projections by applying economic growth rates, but later switched to inflation rates as their economic growth slowed down. Supporters of the European method argued, therefore, that the basic rate for budget projections be decided on the basis of whether the given programs have sustainable funding sources that can withstand the pressures of Korea's rapidly aging society.

After a comprehensive review of existing records, socioeconomic conditions (the aging population, potential economic growth rate, etc.), the social consensus on welfare and redistribution of wealth, and sustainability issues, the authors of this study finally settled upon the (nominal) economic growth rate as the basis for projections on rates of increase in general fiscal benefits and related labor costs. The projection draft, however, emphasizes that inflation rates plus half of real economic growth rates were also considered and discussed. Previous statistics on the rates of increase in benefits and related labor costs are shown in Appendix 3, while low-cost projections applying the inflation rate are shown in Appendix 2.

4

Chapter

Social Insurance Fiscal Projections

1. National Pension
2. Civil service occupation pensions
3. National Health Insurance (NHI) and Long-term Care Insurance for the Elderly (LTCIE)
4. Unemployment Insurance (UI) and Workers Compensation Insurance (WCI)

4 Social Insurance Fiscal Projections

Ⅰ. National Pension[11)]

1. Method of fiscal projection

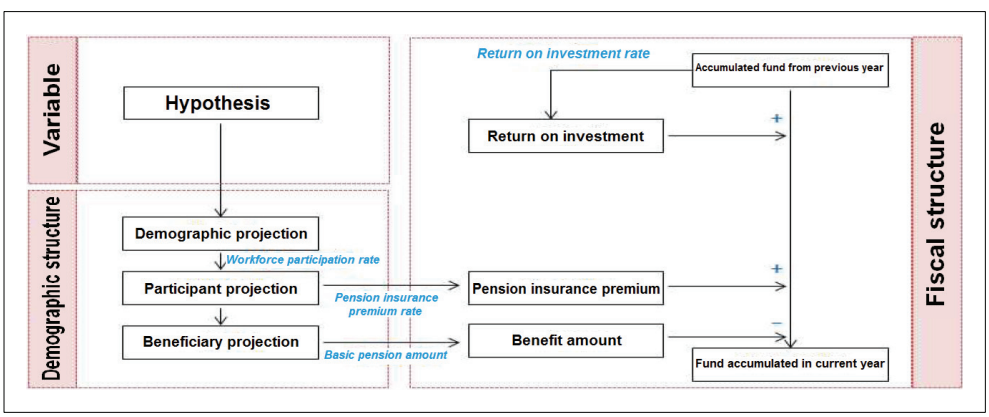
A. Characteristics of the Third National Pension Fiscal Projections

The National Pension Fiscal Projection Committee reviewed and applied the LTEFC's common demographic and macroeconomic variables to projections until 2060, reviewing and utilizing a different set of variables for projections after that time period.

B. Fiscal projection model

The fiscal projection model for the National Pension is divided into three parts: variables, the demographic structure, and the fiscal structure.

〔Figure 4-1〕 National Pension fiscal projection model



11) A summary of the projection method applied to the Third National Pension Fiscal Projections, as determined at the second meeting of the Subcommittee for the Fiscal Projection of Social Security.

(1) Predicting the number of participants

Predicting the number of National Pension participants, as part of the demographic structure, involves estimating the number of policyholders by gender, age, participant type (workplace-based or self-employment-based), and policy-holding period based on given demographic projections. The formula is as follows: the population size of a given year is multiplied by the workforce participation rate and the National Pension participation rate to arrive at the total number of participants. The total number of participants is then multiplied by the local participation rate to arrive at the number of self-employment-based participants. The number of self-employment-based participants is then subtracted from the total number of participants to arrive at the number of workplace-based participants. The number of participants for each given policy-holding period is decided first by dividing all participants into workplace-based participants, self-employment-based participants, or former participants.[12] The patterns of movement in each type or group of participants are traced to find the rate of shift between the groups. This rate is then used to develop a model of the process in which the policy-holding periods change.

(2) Predicting the number of beneficiaries

Predicting the number of National Pension beneficiaries involves applying the terms and conditions of the National Pension and the incidence rates to participants divided by gender, age, type, or policy-holding period. Once the number of new beneficiaries for each year is determined this way, the number of continued beneficiaries for each year should be estimated by applying the mortality rate to the total number of beneficiaries from the preceding year.

① Old age pension

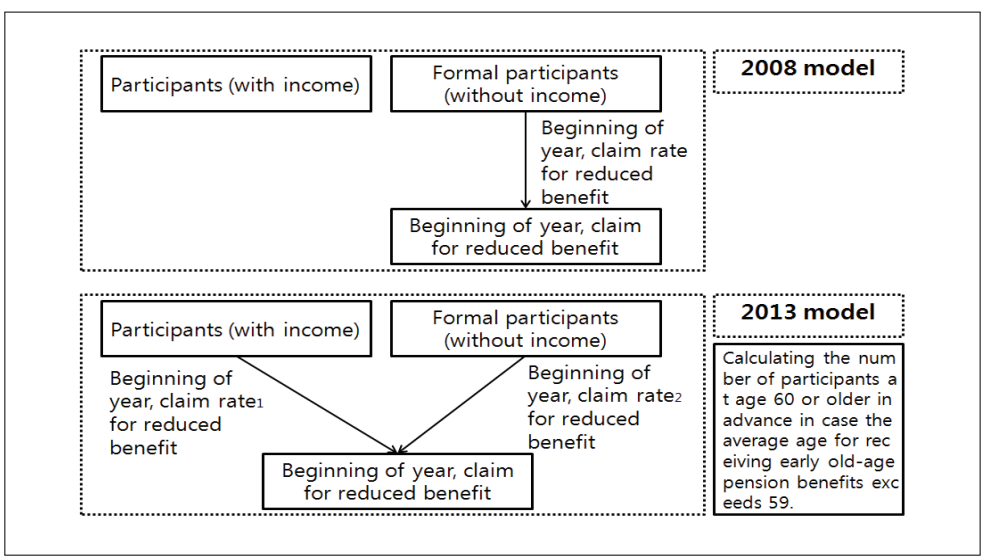
Any participant or former participant who satisfies the terms and conditions of the old

12) Former participants refer to those who held National Pension policies in the past, but who no longer participate in the pension and as such are not receiving pension benefits.

age pension can become a new beneficiary. These conditions require that each new beneficiary be aged 60 at minimum and have held a pension policy for at least 10 years. The amount of pension benefits for each new beneficiary is determined by applying the benefit rate to the basic pension amount. The number of continued beneficiaries is calculated by multiplying the total number of beneficiaries from the preceding year by the survival rate. The amount of pension benefits for a continued beneficiary is calculated by multiplying the average benefit amount from the preceding year by the inflation rate.

Beginning of year claim rate for reduced benefit beneficiary rate is applied to determine the number of new beneficiaries of reduced old age pension benefits. As the figure below shows, the budget projection model for 2013 differs from that of 2008. The 2008 model defined the claim for reduced benefit beneficiary rate as the ratio of beneficiaries who satisfy the age and policy-holding requirements and have no income. The 2013 model, however, first singles out the number of participants at age 60 or older and then projects different early new beneficiary rates for the group of participants and for the group of former participants, in case the average age of new beneficiaries receiving early old age pension benefits exceeds 59.

〔Figure 4-2〕 Projection of reduced old age pension benefit recipient rate



② Disability pension

Like old age pension recipients, beneficiaries of disability pension benefits can be divided between new and continued ones. The number of new beneficiaries can be projected on the basis of the total number of participants, their makeup, and the incidence of disability. The amount of benefits for new beneficiaries is determined by multiplying the basic pension amount by the pension rate for each given level of disability. The number of continued beneficiaries is determined by subtracting the number of beneficiaries who no longer receive benefits (due to death or other causes) from the number of beneficiaries from the preceding year. The amount of benefits for continued beneficiaries is projected by multiplying the average benefit amount from the preceding year by the inflation rate.

Disability pension beneficiaries can continue to contribute to their pension even while receiving benefits. By the time they reach retirement age, they can begin to receive old age pension benefits as well. The fiscal projection model therefore estimates the number of disability pension beneficiaries who also receive old age pension benefits. The old age pension budget projection model excludes the number of beneficiaries who choose to continue to receive disability pension benefits even after they become eligible for old age benefits in its estimations on the number of old age pension beneficiaries and the amount of old age pension benefits paid.

③ Survivor pension

The number of new beneficiaries of survivor pension benefits is calculated by first multiplying the number of participants, former participants, old age pension beneficiaries, and disability pension beneficiaries by the mortality rate. Once the number of deceased beneficiaries is determined in this way, the amount derived is multiplied by the number of their survivors. A former participant is one who has held a policy for 10 years or more. A disability pension beneficiary is one who is at disability level 1 or 2. The amount of benefits for new beneficiaries is determined by multiplying the basic pension amount by the survivor pension rate pertaining to their policy-holding period. The number of continued survivor pension beneficiaries is determined by

subtracting the number of survivors who have lost their pension benefits due to death, reaching adult age (18), or remarriage. The amount of benefits for continued beneficiaries, like that of disability pension benefits, is determined by multiplying the average amount from the preceding year by the inflation rate.

Survivor pension beneficiaries can also be beneficiaries of old age pension and/or disability pension benefits. The fiscal projection model therefore also estimates the number of survivor pension beneficiaries who also receive old age and/or disability pension benefits. The old age fiscal budget projection model excludes the number of beneficiaries who choose to receive survivor pension benefits in estimations on the number of old age pension beneficiaries and the amount of old age pension paid. Survivor beneficiaries who switch to old age pension benefits receive 20 percent more than what they would receive in survivor benefits.

④ Lump-sum refunds

The number of beneficiaries and the amount of benefits to be provided as lump-sum refunds are calculated accordingly.

First, participants and former participants who are of eligible age (60) but unable to receive old age pensions because they have held pension policies for less than 10 years are considered beneficiaries of lump-sum refunds.

Second, there are those who become beneficiaries of lump-sum refunds due to the death of a participant or former participant (i.e., a participant who has held the pension policy for less than 10 years). While the law stipulates that different amounts of lump-sum refunds be provided for beneficiaries according to the situation in the case of participant death, the projection model used in this study does not take into account the lump-sum refunds associated with participant death.

Third, there are those who become eligible for lump-sum refunds due to emigration or other forms of denationalization. Here, the emigration ratio is applied to the number of participants and former participants both. The lump-sum refund amount is calculated using the same method as that utilized to determine basic pension benefits, i.e., by multiplying the amount of contribution paid by the interest rate. Lump-sum refunds paid at

death refer to sums of money paid with respect to participants and former participants who die without surviving family members. Payments stop for beneficiaries of old age and disability pension benefits (level 2 or higher) who die without family members.

(3) Projections of National Pension contribution revenue, basic pension amounts, and reserve funds

① Revenue projections

The amount of proceeds from National Pension insurance contribution can be estimated on the basis of the number of participants and their income levels. In order to estimate the average amount of participant income, participants are divided between workplace- and self-employment-based types, to which different indexation rules apply. The average amount of income per workplace-based participant increases with the wage growth rate, while the average income of the self-employment-based participant is recognized only as a portion of the total amount of income he or she has earned. The average amount of income for each type of participant is then multiplied by the average annual income by age or gender to determine the amount of income for each age group and gender. These average amounts are then multiplied by the insurance rates and contribution collection rates to arrive at the amount of proceeds from National Pension insurance contribution.

② Basic pension benefit projections

The amount of basic pension benefits must be estimated in order to determine how much new beneficiaries should be paid. The total possible policy-holding period of each cohort (y, g, a, and d) is multiplied by the weight of each year to arrive at the B-value, to which the projection formula is applied. For example, for a new beneficiary who has been a participant for 20 years as of 2008 (having begun participation in 1988), the same weight is applied to all years from 1988 to 2007. On the other hand, for a new beneficiary who has held the pension for 10 years by 2008, different weights apply to the years from 1988 to 2007. The weight to be applied is determined on the basis of how much the participant has actually contributed to the pension scheme until

the end of 2010, or until the point in time at which the projection is made. Afterward, the average change in the weight is applied, according to the patterns of participants of the same group. Here, the ratio of persons exempted from contributions as well as the contribution collection rate is applied.

③ Benefit expenditure projections

The amount of benefit expenditure is estimated by applying certain multiples of the average benefit amount for beneficiaries. The expenditure is estimated separately for new beneficiaries and continued ones. The average amount of benefits for new beneficiaries is the amount of basic pension benefits, multiplied by the rates for different benefit levels. The amount for continued beneficiaries is the average amount of benefits for all beneficiaries in the preceding year, multiplied by the inflation rate.

④ Reserve fund projections

The return on investment (ROI) with respect to the given year's pension funds is estimated by multiplying the preceding year's ROI for each pension fund by the estimated ROI rate of the current year for the related sector. Add to this the proceeds from pension insurance contribution, and figure arrives at the total revenue. The total expenditure consists of the pension benefits paid to beneficiaries and the administrative costs. The margin of difference between total revenue and total expenditure, combined with that from the preceding year, constitutes the reserve fund.

C. Main variables in National Pension projections

(1) Population variables

Scenario of medium case for population variables from the LTEFC (as cited in Statistics Korea (2011), Future Population Projections: medium case scenario) were applied to the projections here until 2060. As for projections for the period after 2060, population variables from the National Pension Budget Projection Committee (NPBPC) were applied.

〈Table 4-1〉 Total fertility rate variables

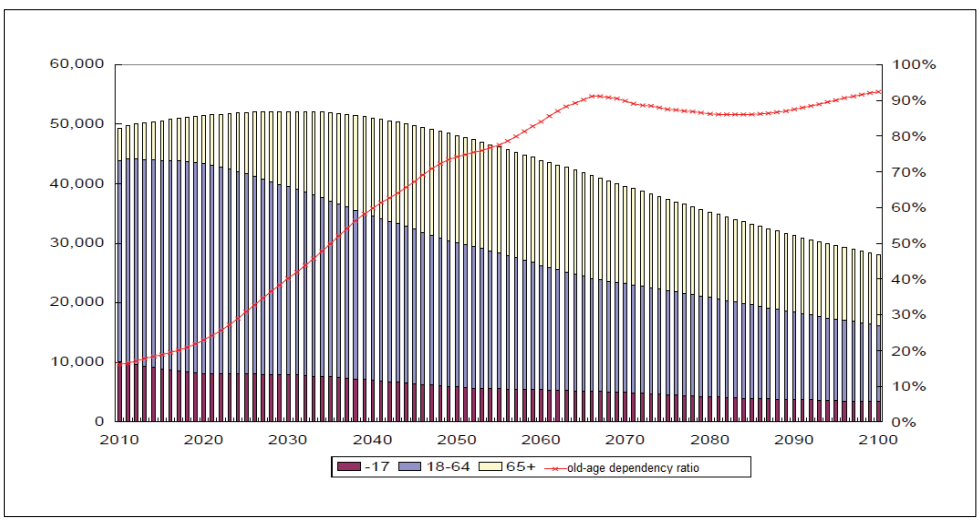
(Unit: number of persons)

	2010	2020	2030	2040	2050	2060	…	2100
Total fertility rate	1.23	1.35	1.41	1.42	1.42	1.42	…	1.42

〈Table 4-2〉 Life expectancy variables

	2010	2020	2030	2040	2050	2060	…	2100
Male	77.2	79.3	81.4	83.4	85.1	86.6	…	89.3
Female	84.1	85.7	87	88.2	89.3	90.3	…	93.2

〔Figure 4-3〕 Population and old age dependency ratio projections



Note: left axis(-17, 18-64, 65+); right axis(old-age dependency ratio).

(2) Macroeconomic variables

Among macroeconomic variables, the real economic growth rate can be estimated using either the bottom-up or the top-down method. The bottom-up method refers to the growth accounting method, which breaks down the GDP increase rate by labor, capital, total factor productivity, etc. and adds up the projection for each factor. The top-down method involves distilling bottom-up projections with theoretical analysis

and empirical findings.

More important for fiscal policymaking is not the level or value of each macro-economic variable per se, but the correlation among different economic variables. The 2013 National Pension Financial Valuation envision that the real wage level will hover above the real interest rate in the early phase, but that the real interest rate will begin to exceed the real wage level by the early 2030s or so.

〈Table 4-3〉 Margin of difference between real wage and real interest growth rates

	2012 ~2015	2016 ~2020	2021 ~2030	2031 ~2040	2041 ~2050	2051 ~2060	…	2100
Wage − interest	0.6	0.8	0.4	-0.1	-0.3	-0.4	…	-0.8

As for the ROI on pension funds, the interest rates included in macroeconomic variables are multiplied by 1.1.

〈Table 4-4〉 Returns on fund investment and corporate bonds

	2006	2007	2008	2009	2010	2011	Average
Return on fund investment (A)	5.77	6.79	-0.18	10.39	10.37	1.99	5.86
Return on corporate bonds (B)	5.17	5.7	7.02	5.81	4.66	4.41	5.46
(A) / (B)	1.12	1.19	-0.03	1.79	2.23	0.45	1.12

The workforce participation rate was estimated for each population group at or over the age of 15, and divided into groups by gender and age. Variables after 2030 are based on time-series analyses of global trends and institutional changes.

〈Table 4-5〉 Workforce participation rate (ages 18 to 59)

	2012 ~2015	2016 ~2019	2020 ~2029	2030 ~2039	2040 ~2049	2050 ~2059	…	2083
Total (ages 18 to 59)	70.8	71.4	73.8	76.9	79.7	82.7	…	87.5
Male (ages 18 to 59)	81.2	81.1	82.8	84.5	85.5	87.2	…	90.0
Female (ages 18 to 59)	59.9	61.1	64.3	68.7	73.3	77.9	…	84.8

(3) program variables

① Participation rates

The National Pension participation rate is determined by dividing the total size of the active workforce by the ratio of participants in the National Pension. The 2013 National Pension Financial Valuation assumes that the participation rate will rise as much as 90 percent.

〈Table 4-6〉 National Pension participation rate projections

	2006	2009	2010	2011	2012	2013	2014	2015 and beyond
2013 National Pension Financial Valuation					88.5%	89.2%	89.8%	90.0%
Actual	84.2%	85.0%	86.0%	87.4%				

② Proportion of self-employed participants

The proportion of self-employed participants in the total pool of National Pension participants has significantly decreased in recent years due to the relative increase in the proportion of workplace-based ones. However, self-employment-based participants are expected to maintain at least a 30-percent share of the total pool even as late as 2050.

〈Table 4-7〉 self-employed participation rate projections

	2007	2008	2009	2010	2011	2012 ~2049	2050 and beyond
2013 National Pension Financial Valuation					44.10%	Linear interpolation	30.00%
Actual		48.10%	46.80%	45.40%	44.10%		

③ Proportion of exempted persons

The proportion of persons exempted from contribution payments due to unemployment or out of business to the National Pension refers to the number of persons exempted in relation with the number of self-employed participants in general. This group's proportion is expected to decrease over time, reaching 30 percent (from 56.5 percent in 2011) by 2050.

〈Table 4-8〉 Exempted persons projections

	2007	2008	2009	2010	2011	2012 ~2049	2050 and beyond
2013 National Pension Financial Valuation					56.48%	Linear interpolation	30.0%
Actual	56.35%	57.24%	58.20%	58.80%	56.48%		

④ Contribution collection rates

The contribution collection rate is estimated separately for workplace-based participants and self-employed ones. As for the former, the latest actual rate, i.e., 98.56 percent, was applied. As for the latter, the rate is expected to increase from the current 66.6 percent to 80 percent by 2050.

〈Table 4-9〉 Contribution collection rate projections

		2007	2008	2009	2010	2011 ~2015	2016 ~2049	2050 and beyond
2013 National Pension Financial Valuation	Workplace					98.56%		
	Self-employed					66.57%	Linear interpolation	80.00%
Actual	Workplace	98.47%	98.41%	98.58%	98.74%			
	Self-employed	60.37%	61.44%	62.59%	65.35%			

⑤ Income levels of self-employed participants

The income levels of self-employed participants in the National Pension are estimated as certain proportions of the income levels of their workplace-based counterparts, and are expected to increase from 53.4 percent in 2011 to 70 percent by 2050.

〈Table 4-10〉 Comparison of income levels of self-employed and workplace-based participants

	2007	2008	2009	2010	2011	…	2015 ~2019	…	2050 and beyond
2013 National Pension Financial Valuation					53.4%	Linear interpolation	30.0%	Linear interpolation	70%
Actual	55.1%	54.1%	54.5%	54.3%	53.4%				

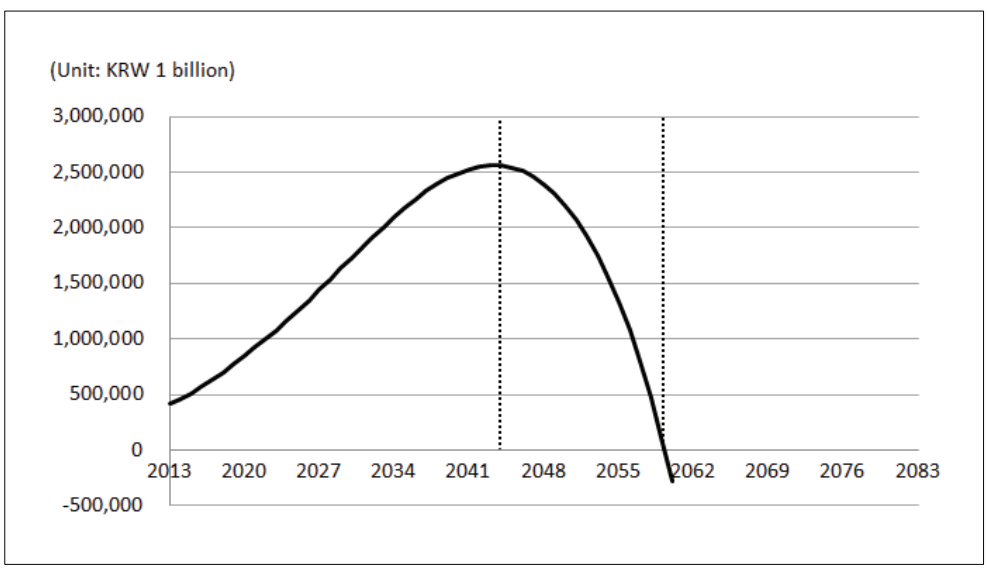
2. National Pension budget projections: Outcomes

(1) Outcomes

Revenue is expected to outweigh expenditure in the National Pension from 2013 to the mid-2040s. The reserve fund is expected to reach its peak, at KRW 2,561 trillion(44.7 percent of GDP), in 2043, and then begin to decrease drastically to the point of exhaustion by 2060.

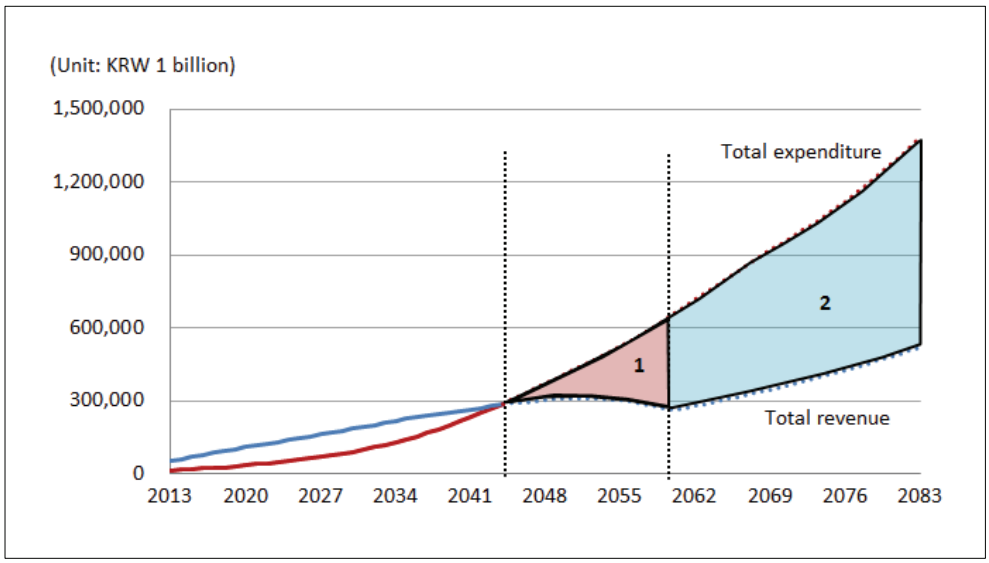
The pay-as-you-go cost rate refers to the ratio of benefit expenditure to the total amount of income earned by paying participants. The rate is expected to increase from the current 2.2 percent to eventually reach 23 percent.

〔Figure 4-4〕 Long-term National Pension reserve projections

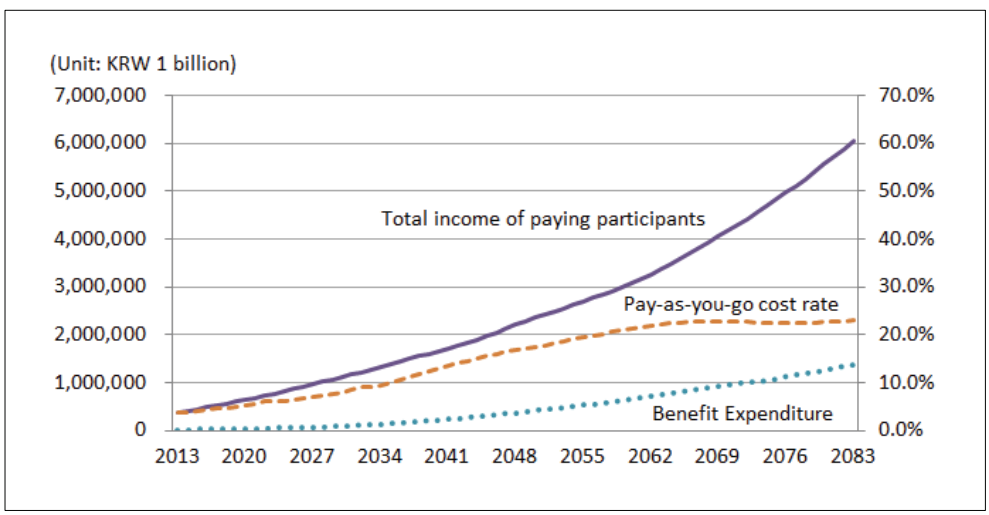


Notes: Total revenue under assumption of 9% insurance premium rate throughout the projection period.

〔Figure 4-5〕 Projections of revenue and expenditure for the National Pension



〔Figure 4-6〕 Pay-as-you-go cost rate projections for the National Pension



Notes: left axis(total income of paying participants, benefit expenditure); right axis(pay-as-you-go cost rate)

〈Table 4-11〉 National Pension fiscal projection

(Unit: KRW 1 trillion)

Year	Reserve fund	Revenue			Expenditure				
		Total	Contribution	ROI / other	Total	Benefit expenditure			Other (administrative, etc.)
						Old age	Survivor	incapacity	
2013	418	52	32	20	13.3	11	1.4	0.4	0.5
2020	847	109	54	55	34	29	4	1	0
2025	1261	145	73	71	56	48	6	1	1
2030	1732	187	95	92	90	77	10	2	1
2035	2184	225	117	108	139	119	16	3	1
2040	2494	258	142	117	214	186	23	3	1
2045	2541	289	169	121	307	269	33	3	1
2050	2201	310	203	106	414	364	45	4	2
2055	1334	301	231	70	525	462	57	4	2
2060	-281	263	263	0	658	581	69	5	3

(2) National Pension sustainability evaluation

The third National Pension Financial Valuation of 2013 considers the funded ratio as the basic financial evaluation index, and the pay-as-you-go cost rate as the supplementary financial evaluation index. For the insurance rate evaluation, the projections sought to maintain funded ratio of two, five, zero deficit(positive net revenue), and steady state with funded ratio of 17.

〈Table 4-12〉 Pay-as-you-go cost rate projections for the National Pension

Year	2020	2030	2040	2050	2060	2070	2080	2083
Pay-as-you-go cost rate	5.2%	8.0%	12.8%	17.4%	21.3%	22.6%	22.6%	22.9%

〈Table 4-13〉 Insurance rate projections for different fiscal sustainability targets of the National Pension

	Year	Funded ratio 2	Funded ratio 5	Positive net revenue	near steady state (funded ratio)
Insurance rate needed for	2083	12.91%	13.48%	14.11%	15.85% (17.0)

Notes: It is assumed that insurance premium rate will increase from 2015.

||. Civil service occupational pensions[13)]

1. Long-term financial projections for the Government Employees Pension System

A. Overview

(1) GEPS Overview

① Aims and historical background

The purpose of the Government Employees Pension System (GEPS) is to ensure a certain standard of living for government employees and their family members in the event of the retirement, death, work-related injury/illness/incapacity, etc. of government employees that may lead to economic hardships. The GEPS has been revised 33 times so far. Details of the changes are summarized below.

〈Table 4-14〉 Main GEPS reforms

Area	Program variables	1995	2000	2009
Expenditure	• Pension age	• First introduced as retirement age or age 60 (applicable to those employed in 1996 or afterward only)	• Range of eligible beneficiaries increased (to include those hired before or in 1995, for gradual increase to age 60)	• Pension claimant age raised (from 60 to 65, starting with newly hired employees)
	• Pension period	• Final salary maintained	• Average salary of the final three years	• Average salary of entire career (following changes in law)
	• Pension rate (based on average salary of entire career)	• Years of service (21 years) × 2.1 %	• Years of service × 2.1%	• Years of service × 1.9%
	• Pension raise	• Pension raised alongside pay raises	• CPI + policy adjustment	• Purely aligned to CPI (starting in 2015)
	• Pension stop system (income review)	• Pension amount halved if the beneficiary is reemployed in a public or governmental organization (subsidized by at least half by the government) now applicable to all public organizations	• Income review system introduced (work / business income) • Half or less of pension benefits	• Reduction rate increased: 10 to 50% on income in excess of pension benefits; later raised to 30 to 70%
	• Other	-	-	• Survivor pension rate dropped from 70 to 60% (starting with new beneficiaries).

13) The budget projection methods used by the GEPS Budget Projection Committee, the PSTPS Budget Projection Committee, and the Military Budget Projection Committee and cited in presentations at the fifth meeting of the Subcommittee for the Fiscal Projection of Social Security are rearranged and presented herein.

② GEPS benefits

Long-term GEPS benefits include retirement, incapacity, and survivor benefits as well as retirement allowances. Short-term benefits include expenses for medical treatments for work-related injury or illness; disaster relief allowances; death condolence money, and others. Of these, the most important are retirement benefits, which are paid in lump sum for beneficiaries who have worked for less than 20 years. Retirement benefits may be paid in the form of retirement pensions, lump-sum pensions, or lump-sum pension deductions for beneficiaries who have worked for 20 years or longer, depending on one's choice. Others eligible for the National Pension may also opt to receive either related retirement benefits or survivor benefits. Disaster relief allowances are benefits that the state or local governments pay as compensations for government employees who suffered work-related accidents. In particular, these allowances are paid to government employees who sustained injuries or illnesses on-duty that led to convalescence, incapacitation, or death. The standard amounts, rates, and conditions applied to these benefits differ according to type, years of service, and/or legal reforms.

〈Table 4-15〉 Types of GEPS benefits

Term	Category		Type	Remark
Long-term benefits	Work compensations	Retirement allowances	• Retirement allowances	Subject to long-term budget projections
	Income security	Retirement benefits	• Retirement benefits • Lump-sum retirement pensions • Lump-sum retirement pension deductions • Lump-sum payments upon retirement	
		Survivor benefits	• Survivor pensions • Lump-sum survivor pensions • Survivor pension supplements • Special survivor pension supplements • Lump-sum survivor payments	
	Disaster relief benefits	Incapacity-related benefits	• Incapacity pensions • Incapacity compensations	
		Survivor benefits	• Survivor compensations • Incapacity pensions for survivors • Pensions for family members of government employees injured on duty • Pensions for survivors of government employees killed on duty • Compensations for survivors of government employees killed on duty	Part of 2013 projections (not included as categories in the OECD SOCX)
Short-term benefits	Disaster compensation		• Expenses for medical treatment for injury/illness sustained on duty	
	Condolence money		• Disaster relief allowance • Death condolence money	

③ GEPS cost allocation and funding

Funding sources for the GEPS[14] are of a contributory nature, involving contributions from both the employer (governments) and the employee, or contributions from the employer only, depending on the nature of the benefits concerned. As for fund administration, GEPS[15] was originally designed as a funded system, but switched to the pay-as-you-go system in 2001, as central and local government came to provide additional funding for financial shortages.

④ GEPS reserve funds

The Government Employees Pension Fund (GEPF) is administered pursuant to Article 73 of the Government Employees Pension Act (GEPA) for the purposes of maintaining and managing the mandatory reserves for pension benefits. Article 69.2 of the GEPA also requires that central and local governments allocate and maintain mandatory reserves, within the limits set by the budget, to ensure the stability of the GEPS. Article 69.8 of the amended GEPA of 2009 now allows the government to draw upon returns of fund management for pension purposes, thus strengthening the role and function of the fund in pension financing.

(2) Financial balance of GEPS

As far as GEPS finances are concerned, expenditure exceeded revenue for the first time in 1993, leading to a deficit in pension accounting. The Asian Financial Crisis of 1997 led to the massive layoffs of government employees, which dramatically in-

14) The costs of a pension system can be allocated under either a contributory system or a non-contributory system. The contributory system requires both the government (whether central or local) and its employees to share the financial burdens of the pension system according to a given ratio. The non-contributory system requires the government to pay the whole cost.

15) A pension can be administered as either a funded system or a pay-as-you-go system. The funded system requires the responsible parties to make payments of standard contributions, based on the future projected cost of the pension, throughout the duration of their participation. The pay-as-you-go system allows participants to pay a sum of contributions divided into equal parts over a given period of time. In this case, contributions need not be cumulated, and even if they are cumulated, serve only as risk reserves in the case of temporary excessive spending on benefits.

creased the fiscal burden on the system, depleting the amount of the GEPF from KRW 6.2015 trillion in late 1997 to KRW 1.7752 trillion in late 2000. An amendment to the GEPA in 2000 enabled the government to overcome pension fund shortages via transfers from general revenue, with the amount of the fund increasing steadily ever since.

〈Table 4-16〉 GEPF trends

(Unit: KRW 100 million)

	2001	2003	2005	2007	2008	2009	2010	2011	2012
Revenue	29,072	36,521	40,935	45,862	48,605	48,439	59,828	65,813	71,990
Expenditure	29,611	37,069	47,031	55,753	62,899	67,467	72,900	79,390	88,949
Transfers from government revenue	599	548	6,096	9,892	14,294	19,028	13,072	13,577	16,959
Pension fund	20,896	30,675	38,295	48,043	46,861	51,873	58,307	60,105	63,576

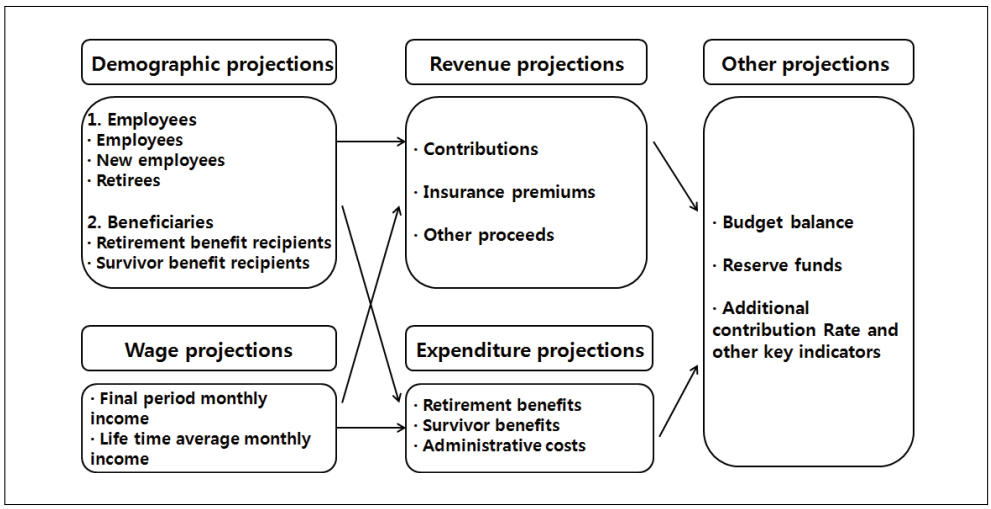
B. Projection modeling for GEPS[16)]

The long-term fiscal projection model utilized for the GEPS is the pension actuarial model, which estimates the specifics of projected revenue and expenditure by simulating the details of the pension system. It includes demographic and economic assumptions only as exogenous variables external to the model. The entry of the basic wage increase rate as the only exogenous variable automatically produces the promotion rate in this model. The promotion rate therefore is not external to the model, but is calculated as an inherent part of the type, age, gender, and seniority of government employees under the given wage structure.

Budget projections for the GEPS consider such areas as the number of government employees and pension benefit recipients; the amount of income subject to insurance contribution; the amount of revenue from insurance contribution; the amount of expenditure on pension benefits, and others.

16) For more information, see Kim Jae-gyeong and Kim Jeong-rok (2002). *A Study on the Long-term Budget Projections for the Government Employees Pension*. Government Employee Pension Service.

〔Figure 4-7〕 Long-term GEPS budget projection model



① Demographic projections

In the GEPS, the total number of employees for the given year is determined by subtracting the number of deceased and retired employees from the total number of employees as of the end of the preceding year and adding the number of new participants. The number of participants is projected on the basis of the total size of the population in Korea, fluctuations in the GDP, the aging of the Korean population, and other such factors that affect demand.

The total number of employees eligible for the GEPS in a given year is projected on the basis of the latest record as the initial setting, estimated economic growth rates, and estimated increases in the demand for welfare services due to the aging population. This projection, moreover, assumes that the number of government employees will remain at a consistent level once the maximum number is reached.

The beneficiaries are divided between general retirees and deceased retirees. The numbers of lump-sum recipients and new retirement pension beneficiaries are estimated based on the number of government employees who have worked for 20 years or more and have chosen to receive pension benefits. The number of new pension beneficiaries is estimated by applying the mortality rate, the pension selection rate, and the pension claimant age to the number of retirees.

② Wage projections

Wage subject to the GEPS is projected according to the wage growth rate, based on the distribution of income in a given month of the preceding year by year, age, years of service, and gender. The average amount of GEPS-subject wages for an entire given period—required to estimate the amount of pension benefits for new beneficiaries—is estimated on the basis of the distribution of income by age and years of service across a given month.[17)]

③ Revenue projections

GEPS revenue is divided into general contributions, pension insurance contribution, retrospective contributions, total refunds, and general administrative costs. General contributions are projected by applying the contribution rate to the number of employees and the average wage amount of a given month. Pension insurance contribution, retrospective contributions, and total refunds are estimated by applying their latest and respective proportions in comparison with general contributions.

④ Expenditure projections

Pension expenditure projections are divided between benefits involving new beneficiaries, and other benefits. Benefits for new beneficiaries, such as retirement and survivor benefits, pension payments, and lump-sum payments, are estimated by applying the per capita amount to the number of beneficiaries for each benefit type. Pension expenditure aside from benefits for new beneficiaries is estimated by multiplying the pension amount paid to each age or gender group in the preceding year by mortality and inflation rates. Incapacity-related benefits that are not part of the long-term budget are estimated separately, assuming that their amounts will change in proportion to changes in the amounts of retirement and survivor benefits.

17) The average amount of wages for three years—required prior to the amendment of the GEPA—was estimated by applying the conversion rate to income distribution in a given month.

⑤ Other projections

Other projections refer to projections concerning fiscal balance, accumulated reserves, and reserve funds, as well as the dependency ratio, the expenditure ratio, the balance ratio, the reserve ratio, and other such measures on the basis of the outcomes of foregoing projections. Here the dependency ratio is defined as the ratio of the number of pension beneficiaries to the number of employees. The expenditure ratio is the proportion of expenditure to total basic revenue (or the GDP). The reserve ratio is the proportion of reserve funds to basic revenue. The balance ratio is the proportion of revenue to expenditure.

C. Major variables in GEPS projections

Major variables in long-term budget projections for the GEPS include the anticipated participation rate, retirement rate, mortality rate, pension selection rate, and other economic assumptions (e.g., inflation rate, wage growth rate, interest rate, etc.). Of the demographic variables, the selection rates for retirement pension, survivor pension, lump-sum payment, and survivor pension inheritance were estimated for different gender, age, seniority, and position groups based on year 2011 records. The mortality rate was also estimated by taking into account the expected increase in life expectancy.

(1) Common projection bases

① Demographic basis

In estimating the future rate of participation by government employees in the pension system, the number of government employees per population of one thousand was determined and tied to the real GDP growth variable.

② Macroeconomic basis

The real GDP growth rate was applied to estimate the pension participation rate, while the wage growth rate was estimated on the basis of the inflation rate from the preceding year.

③ Projection bases for major program variables

Projection bases for major program variables that are necessary to ensure the consistency of projection results in various sectors, or that are otherwise likely to influence the outcomes of projections. Determined by the GEPS Budget Projection Committee,[18] these bases include wage growth rates, the estimated number of government employees, pension selection rates, rates of return on fund management, and the like.

The same wage growth rate is used for projections on all occupational pensions for civil servants (e.g., for government employees, military service, private school teachers, etc.), and is distinct from the private-sector wage growth rate used by the LTEFC in its macroeconomic projections. As for the number of government employees, the actual current number of government employees per population of one thousand is identified. Other demographic variables are then applied to the population of one thousand to estimate the population's size in the future, and derive the likely number of government employees by then. The final number of government employees used in budget projections is determined by taking into account future economic growth and the future demand for welfare services in consideration of the aging population. As for the pension selection rate, the rates decided by the GEPS Development Committee in 2009 are applied in phases. In terms of the rate of returns on fund management, certain multiples of the interest rates estimated by the LTEFC are used.

(2) Other projection bases

① Retirement rate

The retirement age for government employees at Grade 6 and below has recently been extended.[19] Accordingly, this study relies on statistics from 2009 and before in order

18) The GEPS Budget Projection Committee deliberates and decides on critical projection bases and other institutional variables, including demographic and macroeconomic ones, and reviews the budget projection results, evaluation indicators, and the like with the goal of ensuring the reliability and validity of the projection models used.

19) The retirement age has been gradually raised, to 58 in 2009-2010, to 59 in 2011-2012, and to 60 in 2013-2014.

to exclude cases of atypical retirement. The retirement rates applied in this study are based on the number of retirees from 2006 to 2008, and the experience of government employees from 2005 to 2007. Retirees were then divided according to the ages at which they started working in government, the length of their service, positions (general or educational), and gender. For government employees in educational institutions, the employable age begins at 18 and ends at 65, and the duration of service may vary from zero to 45 years. As for other types of government employees, the employable age begins at 18 and ends at 60, and the duration of service may also vary from zero to 45 years. Raw retirement rates are calculated for each five-year age group, gender group, and position group (administrative or educational). New entrants are also divided by gender and position (administrative or educational). 3-year average experience retirement rates apply instead of raw ones to government employees at or above the average retirement age, i.e., 57 for those in educational positions and 52 for those in administrative positions. The projections assume that the ratio of retirees will continue to shrink, based on actual records until 2011.

② Pension and lump-sum payment selection rates

The rates at which eligible participants opt to participate in the retirement pension, the survivor pension, lump-sum payment plans, the early retirement pension, or related pensions should be estimated on the basis of actual records from 2006 to 2008. The selection rates are then divided according to participant positions (general or educational), service periods, gender, and age. Government employees in educational positions from age 36 to 65, having worked for 20 to 45 years, and government employees in general positions from age 36 to 60, having worked for 20 to 45 years, are subject to this projection process. The crude selection rate is the proportion of the number of benefit-selecting government employees out of the total number of eligible employees. Projections on the rates at which participants are expected to select retirement pension benefits are derived by using the same method as that applied for retirement rates. Such projections assume that the retirement pension selection rate will increase, based on actual records up to 2011. This method and assumption were also ap-

plied to projections on the rates at which participants are expected to select survivor pension benefits.

③ Mortality rate

The Future Government Employee Life Expectancy Chart is a modification of the National Life Expectancy Chart in consideration of life expectancy improvements.

④ Other variables

New beneficiaries are classified according to position (general or educational), gender, or age. Here, the three-year weighted-average method is applied to calculate the age distribution of the total number of new beneficiaries. Adjustment ratios are then applied to each age group to render the new beneficiary estimate as accurately as possible.

2. Long-term budget projections for the Private School Teachers' Pension (PSTP)

A. Overview of the PSTP

(1) Overview

① Objectives and background

The PSTP was introduced in 1975 for the purposes of ensuring fair treatment of private school teachers on par with their counterparts at public and national schools, and for bolstering the stability of private school teachers' careers. The Private School Teachers' Pension Act, enacted in 1973, was amended in 1978 to extend pension benefits to the administrative personnel of private schools. The PSTP underwent several reforms from its establishment until 2011, including: raises in insurance rates, the eligible age, and the standard salary, and the assumption that the amount of pension benefits would grow in proportion to the yearly increase in the CPI.

〈Table 4-17〉 PSTP reforms in 2009

Program structure	Before change	After change
Standard salary	Monthly remuneration amount (65% of basic income)	Basic monthly income (or up to 1.8 times the average income of all government employees)
Pension formula	[50%+(service years-20)×2%] * Up to 33 service years: 76%	Service years×1.9%
Cost allocation	8.5% of monthly remuneration amount (or 5.525% of basic income)	Based on basic income (2010: 6.3%, 2011: 6.7%, 2012~: 7.0%)
Pension benefit basis	Average monthly remuneration in the final three years of employment	Average basic monthly income throughout all service years ("Service years" differ by group, based on whether subject to the amended pension law)
Pensionable age	• Persons hired in or after 1996: 60 • Persons hired before 1996: 50→60	65 (applicable to new employees)
Pension increase formula	CPI+ policy modification • Within ±2%p of wage growth and inflation rates	Sliding CPI • 2010~2014: Within ±3%p of wage growth and inflation rates • 2015 and onward: CPI
Survivor pension	Retirement pension×70%	60% (applying to new participants)

② PSTP benefits

PSTP benefits include pension benefits, incapacity-related benefits, retirement allowances, related benefits, and other short- and long-term benefits.

(2) PSTP fiscal balance

The number of schools and individuals participating in the PSTP has been steadily increasing since the pension was first introduced in 1975 and the first 13 beneficiaries began to receive benefits in 1982. Whereas only 30 to 40 percent or so of eligible persons chose to participate in the PSTP prior to the Financial Crisis of the late 1990s, the participation rate shot up to 65.3 percent in 1999 and steadily grew to reach 93.3 percent by 2012. The dependency ratio, which stood at 0.01 percent in 1982, began to exceed 10 percent in the first several years of the new century, reaching 16.3 percent in 2012.

〈Table 4-18〉 PSTP participation rates

(Units: number, %)

	2008	2009	2010	2011	2012
Participating institutions	5,483	5,641	5,794	5,990	6,160
Employed persons	256,840	261,608	267,841	272,899	271,415
Retirees	26,256	25,385	28,380	27,448	30,250
Pension beneficiaries	31,253	34,052	37,275	40,434	44,108
(Retirement pension)	28,673	31,177	34,047	36,849	40,116
(Survivor pension)	2,580	2,875	3,228	3,585	3,992
Choice rate	91.3	91.1	91.4	92.0	93.3
Dependency ratio	12.2	13.0	13.9	14.8	16.3

Note: The amounts of participating institutions and individuals were measured at the end of each year.

Over the last five years, the PSTP has maintained a budget surplus (except in 2008), even though the rate of increase in expenditure continues to outgrow the rate of increase in revenue (from insurance contribution) each year, with the margin of difference between the two consistently narrowing. The changes made to the system, however, will improve the balance in the short run.

〈Table 4-19〉 PSTP fiscal balance

(Unit: KRW 100 million)

Year	Pension fund		Revenue	Expenditure	Balance
	Amount	Increase rate			
2008	88,060	0.0	13,882	13,892	△10
2009	98,910	12.3	24,633	13,783	10,850
2010	112,275	13.5	27,236	13,871	13,365
2011	118,634	5.7	23,151	16,792	6,359
2012	131,627	10.9	31,490	18,497	12,993

B. Overview of PSTP projections

(1) Legal grounds for PSTP projections

Article 7.2.2 of the National Finance Act, as well as Article 2.3 of the Enforcement Ordinance for the same Act, requires policymakers to include long-term budget projections in the Long-term Fiscal Plan, and update them at least every five years, with respect to pension schemes run for 40 or more fiscal years. Article 43 ("Principles of Responsible Cost Sharing") of the Private School Teachers' Pension Act[20] also requires updates on budget projections every five years.

(2) Projection system

The six-member of nongovernmental experts was assembled to form a Private School Teachers' Pension Budget Projection Committee (TPBPC). The organization of TPBPC aim to maintain transparency, objectivity, and reliability of long-term fiscal projection, participated by nongovernmental experts and Private School Teachers' Pension Service officials. The TPBPC reviews and decides the main bases for budget projections, the periods and models of projection, and the indicators for fiscal evaluation, and also conducts projections and assessments. In addition, the TPBPC devises long-term budget projection reports and submits proposals on necessary policy improvements and changes, in addition to reviewing related policy measures.

C. PSTP projection model and method

PSTP budget projections include projections on eligible participants and beneficiaries, revenue from contributions/insurance contribution, returns on fund management, and spending items.

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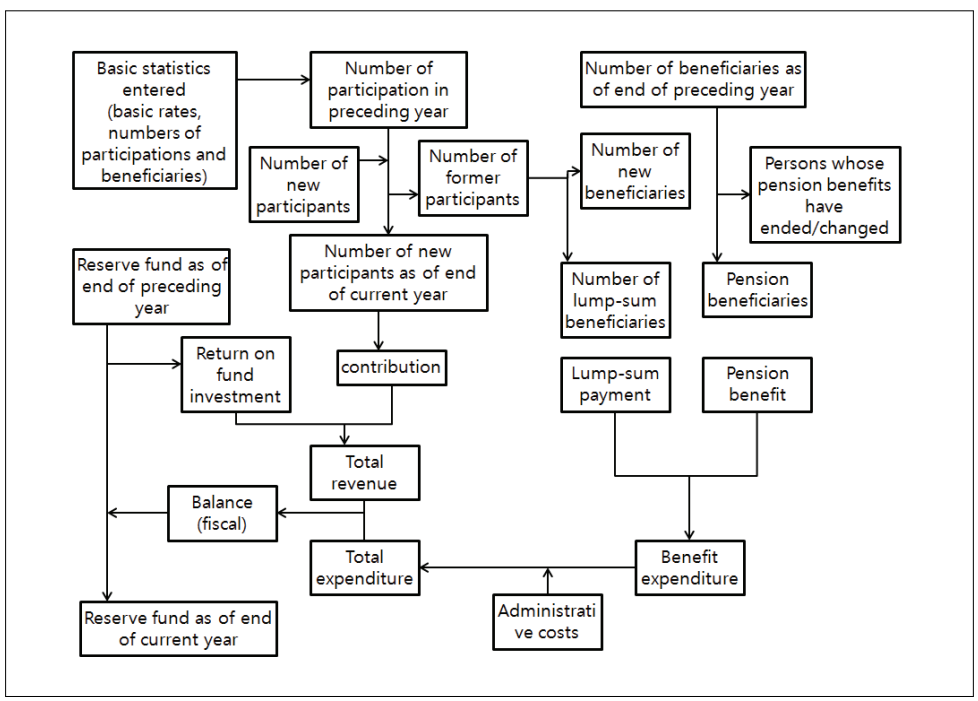
20) 1. The law requires that the sum of individual contributions, government contributions, employer contributions, accident compensations, and other profits from scheduled operation be maintained at a level necessary for future balance.
2. Labor costs must be re-estimated at least every five years.

Revenue projections are based on the number of eligible participants and their contribution amounts as well as on the amount of fund investment returns. Expenditure projections include expenses on benefits provided and administrative costs. The PSTP has its own formula for determining the amount of benefit expenditure, and ties administrative costs to the amounts of individual contributions received. The balance between revenue and expenditure is added to the reserve fund from the preceding year. Projection outcomes are then used to determine expected levels of revenue, expenditure, reserve funds, and balances, as well as dependency ratios, expenditure rates, balance rates, and other such fiscal indicators.

〔Figure 4-8〕 Long-term PSTP fiscal projection model



① Number of participants

The number of participants as of the end of the current year is obtained by subtracting the number of deceased and retired participants from the number of participants in the preceding year, and then adding the number of new participants. The number of new

beneficiaries should be estimated for each position, gender, or age group, based on the participation records of the last three years and the growth rate of the entire population at large.

② Number of pension beneficiaries

The number of pension beneficiaries is estimated on the basis of the number of retirees. The number of new beneficiaries equals the number of participants who have worked for 20 years or longer, which is then multiplied by the pension selection rate. The number of beneficiaries who have not selected any pension type then becomes the number of lump-sum pension beneficiaries.

③ Survivor beneficiaries

Survivor beneficiaries can be divided between recipients of survivor pensions who are related to contributing participants, and recipients of survivor pensions who are related to persons who have already begun, or were about to begin, to receive pension benefits before their death. Types of survivor benefits include lump-sum payments, lump-sum payments of pension benefits, and pension benefits for new beneficiaries. The number of new survivor pension beneficiaries is added to the number of existing beneficiaries as of the end of the preceding year to arrive at the total number of beneficiaries as of the end of the current year.

④ Expenditure projections

The monthly remuneration amount per capita for the current year is estimated by multiplying the preceding year's monthly remuneration amount per capita[21] by the wage growth rate and the seniority-based salary rate. The monthly remuneration amount per capita is then used to estimate the average monthly remuneration amount. The amount of pension and lump-sum benefits per capita is estimated and used along with the number of lump-sum and pension beneficiaries to estimate the total amount of expenditure.

21) Data from 2008 are excluded from the projection and the analysis so as to leave out atypical cases of retirement resulting from pension reform.

⑤ Pension reserve projections

The total amount of revenue is projected by adding up the amount of participant contributions and the returns on fund investments. The total amount of expenditure is estimated by adding up the amounts provided as benefits and the administrative costs. The balance between the total revenue and the total expenditure is the new reserve, which is added to the reserve fund from the preceding year.

D. Major inputs in PSTP projections

(1) Main program variables

Main program variables refer to all variables that must be applied in common to different types or areas of projections, or that otherwise will affect the outcomes of projections in significant ways. These include, among others, the number of pension participants, the wage growth rate, and the rate of return on fund investment.

① Number of participants

The number of new PSTP participants should be estimated for each position (education or administrative), age, and gender group. The total number of participants as of the end of the current year should be obtained by subtracting the number of deceased or retired participants from the preceding year's total, and adding the number of new participants in the current year.

② Public pension co-selection rate

At present, the proportion of persons who have worked for 20 years or more and are under the age of 60 is 10 percent, and the proportion of those who have worked for 20 years or more and are age 61 or over is zero percent. Thus, 47.3 percent are persons who have worked for less than 20 years (according to the National Pension standard, 23.7 percent).

③ Retirement rate

Retirement rates are estimated by dividing employees and retirees (except subjects of survivors pension conversion), from 2005 to 2009, into groups according to age and service period.[22]Employees between age 18 and the default retirement age (DRA) were divided into groups according to age of service entry, service duration, position (educational or administrative), and gender. The minimum possible age for entering government service is 18. The DRAs are 66 and 62 for teachers and administrative employees, respectively.

④ Promotion index

Retirees are divided into groups by position (educational or administrative) and gender to obtain the promotion index for retirees according to the age of service entry and the policy-holding period. A separate index is calculated for each age between 18 and 65. Where it is difficult to arrive at such an index for older employees, the assumption that those employees will not be promoted further until they reach the DRA is applied.

(2) Other program variables

Selection rates concerning retirement pensions, lump-sum pensions, lump-sum refunds (1-lump-sum pensions selection rate), and survivor pensions are estimated for each age group. With 18 as the minimum possible age for service entry, selections are made between the ages of 38 and 65. Pension selection rates for groups under age 38 or over age 68 are based on the selection rates of the 38- and 65-year-olds. The crude selection rate is the ratio of selection-making employees to the total pool of eligible employees, applied with the weighted average from the preceding three years.

22) Data from 2008 are excluded from the projection and the analysis so as to leave out atypical cases of retirement resulting from pension reform.

3. Long-term fiscal projections for the Military Pension

A. Overview

① Sharing of costs

Soldiers pay 8.5 percent of their monthly remunerations into the Military Pension and other benefits of a compensatory nature, and the central government (as employer) pays the rest 8.5%. The transfer fund is the amount of money that the government support in addition to the sum of individual and governmental contributions is not enough to operate the Military Pension.

② Current fiscal balance

No fund could be accumulated for the Military Pension because pension beneficiaries existed from the launch of the system in the 1960s. The period of time for which beneficiaries can receive Military Pension benefits was lengthened over time, due to the introduction of the early retirement system and the realities of the aging population. Thus the participation rate rose dramatically from 87 percent in 2000 to 97 percent in 2011. The government's transfer fund also increased, to reach KRW 1.15 trillion as of 2012.

〈Table 4-20〉 Military Pension fiscal balance

(Unit: KRW 100 million)

Year	Individual contributions(a)	Government contributions(b)	Special transfers(c)	Transfer fund(d)	Revenue (A=a+b+c+d)	Expenditure (B)	Balance (A) − (B)
1963	2	5	0	0	7	7	0
1973	27	36	21	3	87	87	0
1980	145	120	0	416	681	660	21
1990	599	592	0	2,714	3,905	3,885	20
2000	1,664	3,260	938	4,569	10,431	10,429	2
2009	3,177	7,124	0	9,409	19,709	20,569	△÷860
2010	3,286	7,155	0	10,566	21,007	22,068	△÷1,061
2011	3,506	7,773	0	12,266	23,545	23,140	405
2012	3,786	9,165	0	11,503	24,454	24,741	△÷287

③ Types of Military Pension benefits

The Military Pension provides for retirement benefits, wounded soldier pension, survivor benefits, and compensations. Each of these benefits, with the exception of the wounded soldier pension, is subdivided into five types, for a total of 16 types.

〈Table 4-21〉 Types of Military Pension benefits

Main type	Benefit
Retirement benefits	Discharge pension
	Lump-sum discharge pension
	Lump-sum refund upon discharge
	Lump-sum pension
	Retirement allowance
Wounded soldier pension	Wounded soldier pension
Survivor benefits	Survivor pension
	Additional benefits of survivor pension
	Special additional benefits of survivor pension
	Lump-sum survivor pension
	Lump-sum survivor payment
Compensations	Compensation upon death
	Incapacity compensation
	Death condolence money
	Disaster relief allowance
	Disaster relief compensation

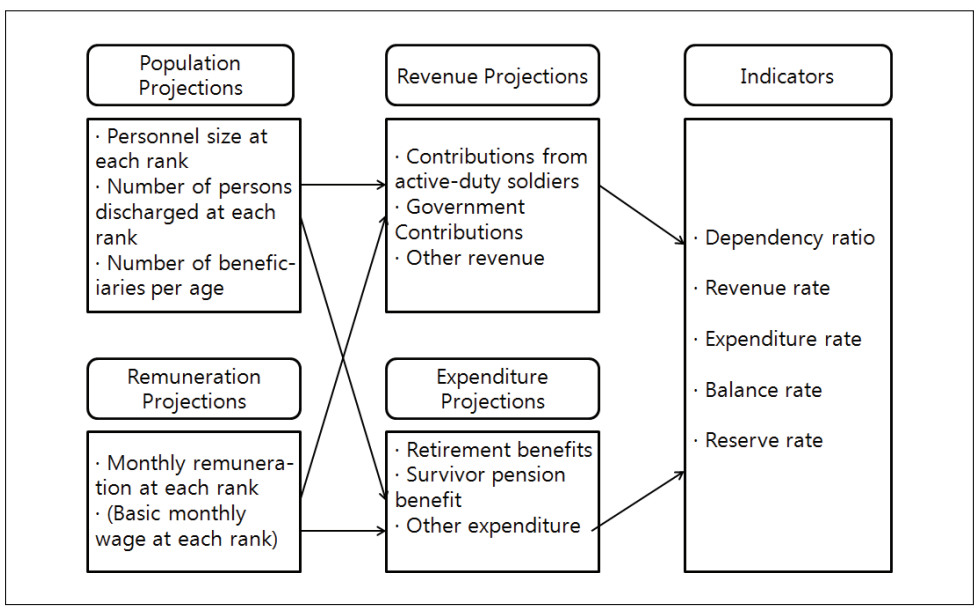
B. Military Pension projection model and method

Long-term Military Pension fiscal projections are based on estimates of the total number of soldiers and eligible beneficiaries, and revenue and expenditure. To estimate the number of soldiers, the retirement age and the quota for each position or rank is taken into account, as well as the current size of military personnel at each rank and other related characteristics. Pension benefits are then estimated in consideration of

the rates of discharge, wounds, death, and other factors affecting service duration. The number of beneficiaries is estimated for each type of benefit on the basis of estimated discharge, wound, death, and dependency rates.

The wage growth rate used to estimate contributions to and benefits derived from the Military Pension is the same one used in PSTP and GEPS projections, and not the wage growth rate asserted by the LTEFC(private sector national pension system). The resulting Military Pension projections include not only revenue projections based on contributions and expenditure, but also apply such fiscal indicators as the dependency ratio and the rates of expenditure, balance, and reserves.

〔Figure 4-9〕 Long-term Military Pension fiscal projection model



① Population projections

Each active-duty soldier rank has its own quota, retirement age, and minimum period of service required for promotion. Therefore, the number of active-duty soldiers and retirees must be estimated separately for each rank. The size of active-duty personnel depends on the quota and the operating ratio of each rank. This study's projections used the MND's mid-term quota plan for the period until 2017. Projections for the

subsequent years are based on the assumption that the current quota will be maintained. The number of retirees depends on the size of personnel and the retirement (or discharge) rate. Since projections for the years after 2017 are based on a fixed quota for personnel, the number of retirees will also be fixed.

It must be noted that the Military Pension differs from other occupational pensions (e.g., the GEPS, the PSTP, etc.) in that it is the military that strictly decides and controls the size of personnel, which means the Military Pension in terms of beneficiary number is not as affected by changes in the national population as other occupational pensions are.

② Revenue projections

Revenue projections include projections of contributions from active-duty soldiers, refunds, recourses, and retrospective contributions. To estimate the contribution amounts from active-duty soldiers, the number of contributing soldiers and the amount of contributions are calculated separately. Personnel size is estimated by multiplying the quota at each rank by the operating ratio. The result is then multiplied by the ratio of soldiers in active duty for more than 33 years in order to arrive at the number of contributing soldiers at each rank. The ratios of various types of service (long-term, extended, or short-term) are applied. The representative monthly remuneration amount is calculated by applying the average number of service years and the average additional salary class. The recourse, retrospective contribution, and refund projections can be obtained by estimating the amount of recourse, the average retroactive period, and the amount of refund per capita, as well as the wage growth rate.

③ Expenditure projections

The amounts of retirement and pension benefits are projected and added up to arrive at the total expenditure projection. The amount of retirement benefits is estimated for each different type of discharge from military service (i.e., normal, injury-related, or deceased), the service duration, and the rate of the selected pension (i.e., retirement,

wounded, or survivor). The average service period and the additional salary class are applied to the number of pension-selecting soldiers to arrive at the representative monthly remuneration amount as well as the amount of retirement benefits. The amount of pension benefits can be estimated by identifying the number of beneficiaries at each age level at the beginning of the current year and the average amount of pension benefits in the Military Pension information system. Then the number of new beneficiaries is added and the number of deceased beneficiaries subtracted. The remaining number is multiplied by the average amount of pension benefits.

C. Major bases for Military Pension fiscal projections

A major projection basis refers to the basis of projection that is necessary to ensure the consistency of projection results in various sectors, or that is otherwise likely to influence the outcomes of projections. In the case of the Military Pension, these bases include, among others, operating ratio, expiration rate, and pension selection rate at each rank.

① Revenue-related bases

Revenue-related major projection bases include the operating ratio at each rank, the ratio of soldiers in active duty for more than 33 years, the ratio of soldiers in different types of service, the average period of service, the average additional salary class, and so forth.

② Expenditure-related bases

Expenditure-related critical projection bases include the discharge/retirement rate at each rank, the ratio of normally discharged soldiers, the average service period, the pension selection rate, the average number of months for which pension benefits are paid, the average number of years for which pension benefits are deducted, the average age of beneficiaries, the expiration rate, and the survivor pension conversion rate.

Ⅲ. National Health Insurance (NHI) and Long-term Care Insurance for the Elderly (LTCIE)[23]

1. National Health Insurance (NHI)[24]

A. NHI projections overview

Pursuant to Article 7.2.2 of the National Finance Act and Article 2.3 of the Enforcement Ordinance for the same Act, the Ministry of Health and Welfare (MOHW) and the National Health Insurance Service (NHIS) conduct long-term fiscal projections for the NHI. The NHI Budget Projection Committee ensures the reliability of the projection process and results with its own review.

B. NHI fiscal projection model and method

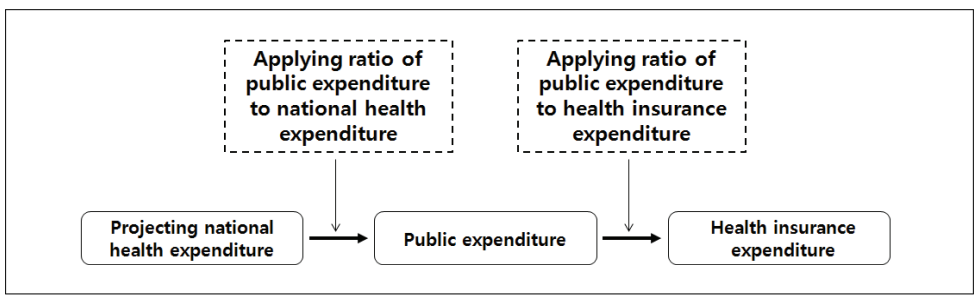
Multiple models and methods could be used to produce NHI spending projections, including, the time series-based projection model (IMF, NHIS, and National Assembly Budget Office); the cohort-component method (EU and the Korea Institute of Public Finance); and the driver-by-driver projection model (OECD and the Korea Institute of Health and Social Affairs). The time series model bases its projections on past trends. The cohort-component method predicts the average amount of benefits per capita in a given population (divided by gender and age). The driver-by-driver prediction model takes into account likely changes in related factors, such as the emergence of new medical technology and changes in government policy.

The projections in this study utilize the OECD model used in OECD working paper[25] to estimate national health expenditure. The historical ratio of public health expenditure to national health expenditure is applied to projected public health ex-

23) Rearranges the projection models used by the NHI Budget Projection Committee and the LTCIE Budget Projection Committee.
24) Based on excerpts from the proceedings of the 11th meeting of the Subcommittee for Fiscal Projection of Social Security.
25) OECD. (2012). Public Spending on Health and Long-term Care.

penditure to arrive at the amount of public health expenditure. The public health expenditure estimate is then applied to the ratio of public health expenditure to NHI expenditure to estimate NHI spending. The period of time subject to the analysis spans from 2012 to 2060. National health expenditure, public expenditure, and NHI expenditure are estimated in terms of nominal prices.

〔Figure 4-10〕 NHI expenditure projection model



(1) National health expenditure estimates (based on the OECD model)

The OECD published national health expenditure data pertaining to the years up to and including 2010, and calculated estimates for the 2011/2012 period based on NHI expenditure data. The 2011/2012 national health expenditure was estimated by applying the average yearly increase rate to the ratio of NHI expenditure to national health expenditure.

〈Table 4-22〉 National health expenditure, 2001 to 2012

(Unit: KRW 1 billion)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
National health expenditure	32,258	34,599	39,614	43,126	48,690	55,450	62,263	67,602	75,637	85,544	91,167	95,904*

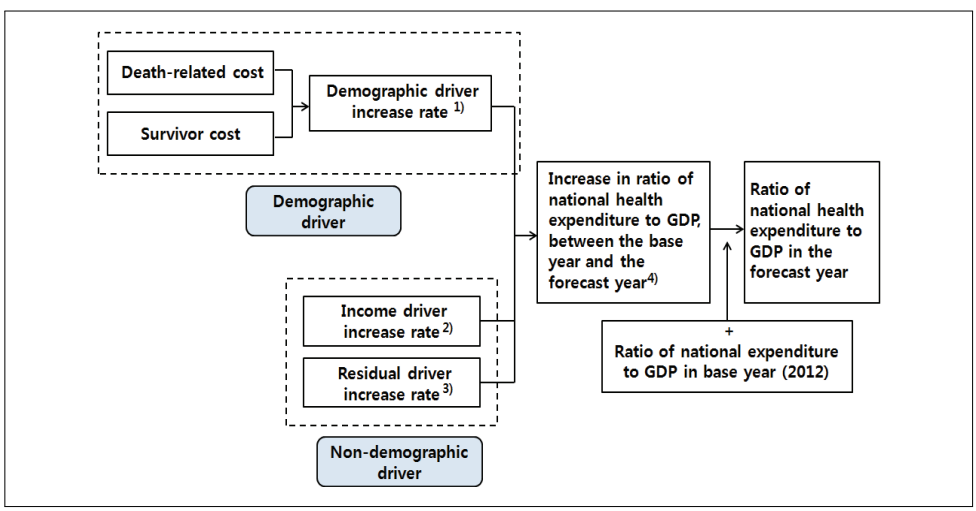
Note: The item marked with an asterisk is an estimate by the OECD.

The OECD working paper model divides the share ratio of national health expenditure to GDP by demographic, income, and residual drivers before adding them up. The national health expenditure based on demographic drivers is the sum of death-related and survivor expenses. A death-related cost is the amount of medical expenses for each per-

son at age 90 or over. The death-related cost is the least in the highest age group, whose members are all assumed as deceased in the given current year. The death-related costs of people at age 50 or under are estimated by multiplying the death-related costs of people at age 90 or above by an adjustment factor. The total amount of death-related costs is obtained by multiplying per-capita costs by the number of deceased persons in every age group.

The amount of survivor costs is obtained by subtracting the death-related cost of each age group from the health expenditure of that age group. As income is a major factor in health expenditure increases, survivor costs reflect income elasticity. Health expenditure per capita per year, reflecting the income driver, is estimated by applying the yearly GDP growth rate per capita from the LTEFC. Long-term health insurance budget projections apply income elasticity as used in the OECD's Public Spending on Health and Long-term Care (2012). Coverage increases, institutional changes, the emergence of new medical technologies, and changes in relative prices form residual drivers are considered, along with income elasticity, to track the rate of increase in national health expenditure between 2001 and 2012.

〔Figure 4-11〕 National health expenditure projection model (OECD working paper model)



Notes: 1) Rate of demographic driver increase between the base year and the forecast year.
2) Rate of income driver increase between the base year and the forecast year.
3) Rate of residual driver increase between the base year and the forecast year.
4) Rate of national health expenditure increase between the base year and the forecast year (i.e., demographic driver increase rate + income driver increase rate + residual driver increase rate).

(2) Public health expenditure projections

Based on the national health expenditure projections produced using the OECD model, the public health expenditure is estimated in terms of the ratio of public expenditure to national health expenditure, between 2001 and 2012.

(3) NHI expenditure projections

NHI expenditure is estimated on the basis of the assumption that the ratio of NHI expenditure to public expenditure in 2012 will remain the same until 2060.

〈Table 4-23〉 Changes in national health expenditure, public expenditure, and NHI expenditure

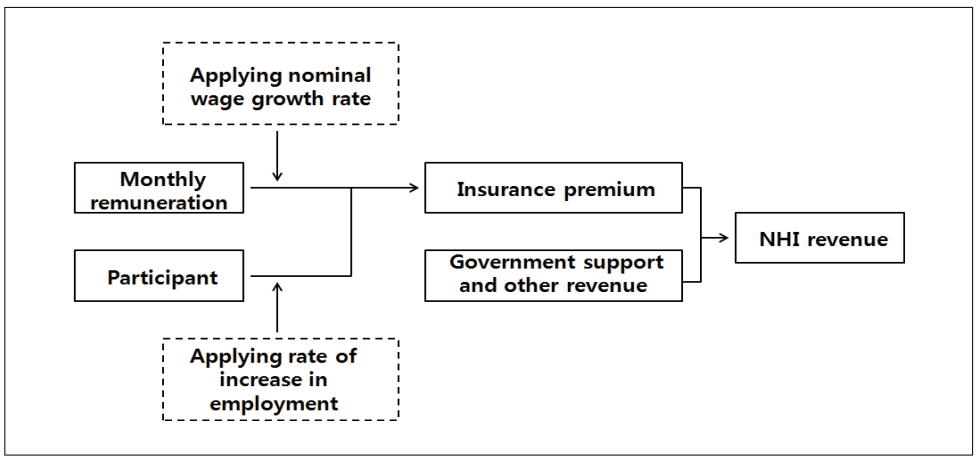
(Units: KRW 1 billion, %)

	National health expenditure	Ratio of public expenditure to national health expenditure	Public expenditure	Ratio of NHI expenditure to public expenditure	NHI expenditure
2001	32,258	56.09	18,093	77.66	14,051
2002	34,599	54.98	19,022	77.02	14,651
2003	39,614	52.60	20,839	75.55	15,744
2004	43,126	52.94	22,833	74.47	17,004
2005	48,689	53.27	25,935	73.85	19,154
2006	55,450	54.82	30,397	73.90	22,462
2007	62,263	55.08	34,297	74.51	25,554
2008	67,602	54.84	37,073	74.29	27,541
2009	75,637	56.72	42,905	72.68	31,185
2010	85,544	56.46	48,294	72.18	34,860
2011	91,167	55.34	50,448	74.09	37,377
2012	95,904*	54.43	52,199*	74.33	38,804

Note: Items marked with asterisks are estimates by the OECD.

(4) NHI revenue projections

[Figure 4-12] NHI revenue projection model



NHI revenue consists of insurance contribution paid by participants, government subsidies, and other types of profits (additional charges and interests, etc.). To estimate the amount of insurance contribution, the rate of employment increase is used as the rate of participant number increase. The wage growth rate is then used as the rate of increase in monthly remuneration amounts. The employment increase rate and wage growth rates are provided by the LTEFC. The contribution collection rate is based on the actual rate from 2012. The amount of government subsidies is limited to 20 percent (14 percent from the National Treasury and 6 percent from the National Health Promotion Fund from sales tax of Tobacco) of the estimated revenue of insurance contribution.[26]Other types of profits are estimated based on the average ratio of these types of revenue to insurance contribution over the preceding five years.

26) The law requires the government to subsidize 14 percent of revenue from the insurance premium estimate each year, insofar as the government budget allows. The law, moreover, requires the government to subsidize 6 percent of the insurance premium estimate each year with the National Health Promotion Fund.

2. Long-Term Care Insurance for the Elderly (LTCIE)[27)]

A. Projections overview

The LTCIE applies the same legal grounds and institutional arrangements as the NHI for its long-term fiscal projections. The LTCIE fiscal Projection Committee ensures the reliability of the projection process and results with its own review.

B. Projection models and methods

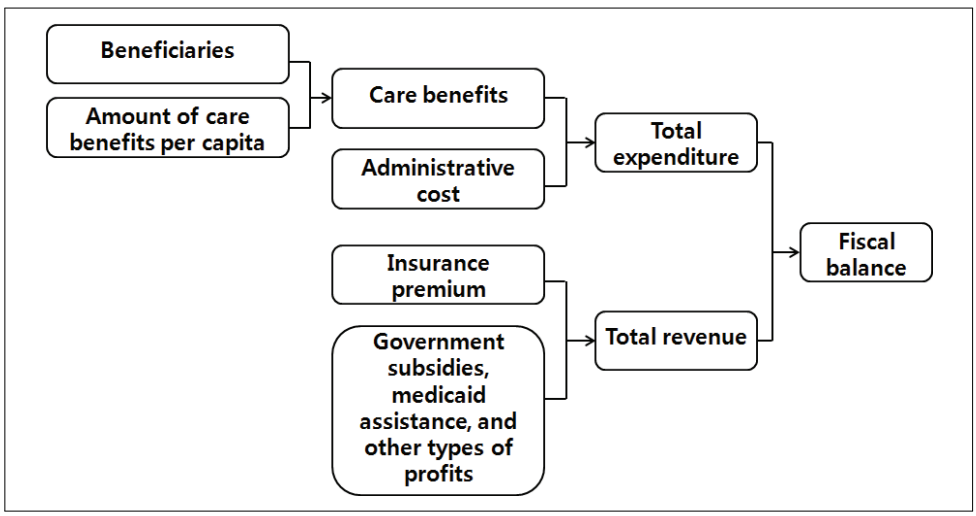
LTCIE expenditure is projected for both the entire population and each individual beneficiary. The cohort-component method and the cell-based method are commonly used. Using the cohort-component method (Choi, 2010; Park, 2011; EU, 2011), one first estimates the average amounts of benefits for each gender group, age group, and individual. Using the cellular method (PSSRU, 1998; Yun, 2010; Kwon, 2011), one first calculates the probability of long-term care for each gender, age, chronic disease, income, and residential type (living alone or with others) group, and then records the estimate for each group in separate cells.

The LTCIE projections in this study apply the cohort-component method used by the EU in its long-term care budget projections for 2011. The MOHW's Basic Plan for Long-Term Care for the period from 2013 to 2017 was used to identify the number of beneficiaries for each gender, age, and level group and the amount of care benefits by 2017. These figures were then applied to projections pertaining to the period from 2018 to 2060. The number of beneficiaries and the amount of care benefits by 2017 were converted as necessary based on gender, age, and level-by-level data from 2011. As for revenue projections, insurance contribution were estimated on the basis of NIH insurance contribution. The amounts of government subsidies and other types of profits were estimated on the basis of the amount of insurance contribution. The

27) Based on excerpts from the proceedings of the third meeting of the Subcommittee for Fiscal Projection of Social Security.

amount of medicaid assistance was estimated on the basis of the amounts of care benefits and administrative costs in relation to total expenditure.

〔Figure 4-13〕 LTCIE fiscal projection model

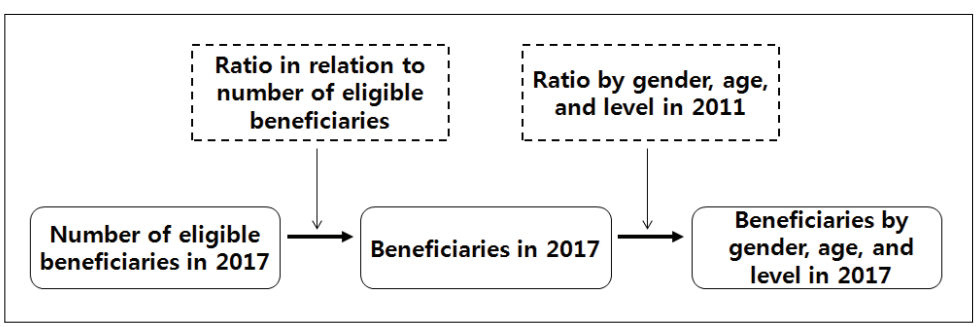


(1) Expenditure projections

① Number of beneficiaries

The beneficiary number is estimated separately for each gender, age, or level group for the period from 2018 to 2060, by applying the usage rate of 2017 to the estimated population of each year.

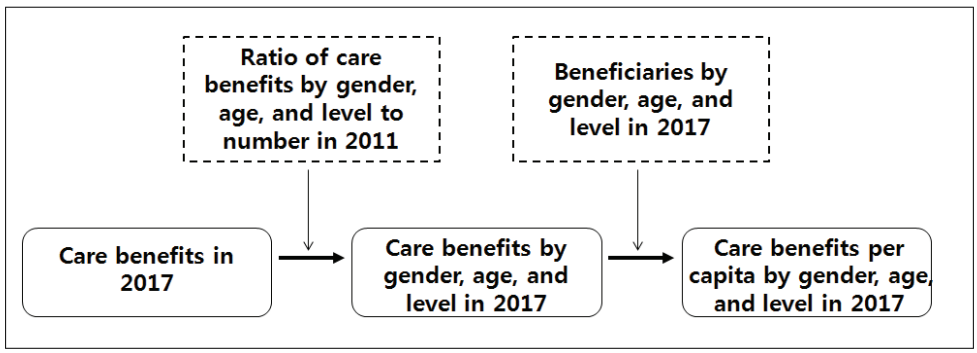
〔Figure 4-14〕 LTCIE beneficiary projections for 2017



② Projections of care benefits per capita

The amount of care benefits per capita, between 2018 and 2060, is calculated for each beneficiary grouped by gender, age, and level, assuming that the amount will increase at the same rate as the wage growth rate.

[Figure 4-15] Projections of care benefits per capita for LTCIE (2017)



③ Total expenditure

Total expenditure for the LTCIE can be estimated by adding the amount of administrative costs to the amount of care benefits. The amount of care benefits is estimated, in turn, by multiplying the amount of care benefits per capita (whether by gender, age, or level) by the number of beneficiaries. The administrative cost is estimated by applying the ratio of administrative costs to care benefits in 2017 to the estimated amount of care benefits.

(2) Revenue projections

LTCIE revenue consists of insurance contribution, government subsidies, individual medical contributions, and other types of profits. The amount of insurance contribution is estimated by applying the LTCIE insurance rate to the amount of insurance contribution for the NHI. The amount of NHI contribution is estimated on the basis of long-term NHI budget projections made in 2013. The government subsidizes insurance contribution up to a certain amount. The amount of individual medicaid assistance from tax revenue is obtained by subtracting the amount of care benefits from

total expenditure. The entire amount of administrative costs can be derived from the amount of individual medicaid assistance, applying the ratio of administrative costs to care benefits in the total expenditure from 2012. The amount of other types of profits can be estimated by applying the ratio of these types of revenue to insurance contribution from 2012.

Ⅳ. Unemployment Insurance (UI) and Workers Compensation Insurance (WCI)[28)]

1. Unemployment Insurance (UI)

A. Long-term UI fiscal projections overview

Long-term UI fiscal projections involve dividing the finance into a number of different accounts (i.e., finance for unemployment benefits, employment security, and occupational competency development programs), and estimating the revenue, expenditure, and reserve fund for each. The amount of expenditure for each program is projected on the basis of actual records accumulated so far and by identifying major variables. The amount of revenue is derived by estimating the income level of insurants and the number of insurances, and then by adding up the amounts of insurance contribution, interests, and other types of profits.

B. Historical fluctuations in UI finance and program rates

(1) Fluctuations in UI finance

As the unemployment rate in Korea had been low up until 1997, the UI finance had

28) The projection models used by the unemployment insurance and workers compensation insurance budget projection committees are rearranged here based on excerpts from the proceedings of the fourth meeting of the Subcommittee for Fiscal Projection of Social Security.

maintained significant surpluses. However, with the outbreak of the Financial Crisis, UI expenditure in 1998 and 1999 exceeded insurance premium revenue by 21.9 and 3.2 percent, respectively, and took up 86.5 and 85.2 percent of total revenue, respectively. UI expenditure continued to increase until 2009 after the coverage range was expanded in 2001. Expenditure on UI benefits, in particular, began to exceed insurance premium revenue in 2007 and total revenue in 2009. Expenditure on employment security and occupational competency development programs also continued to exceed insurance premium revenue between 2006 and 2012, as well as total revenue, except in 2011. The ratio of reserve funds to expenditure—crucial to the unemployment benefits program—continued to decrease, dropping to 0.41 in 2011.

〈Table 4-24〉 Fluctuations in the UI Fund

(Unit: KRW 1 billion)

	Revenue				Expenditure			Year-end reserve fund (F)
	Total revenue (A+B+C)	Insurance contribution (A)	Other revenue[1] (B)	Interests (C)	Total expenditure (D+E)	Insurance operating cost (D)	Other expenditure[2] (E)	
2000	1,330,904	1,197,032	19,483	114,389	502,703	495,324	4,502	2,127,019
2001	1,669,575	1,486,369	30,525	152,681	882,075	876,023	6,052	2,914,519
2002	1,797,905	1,607,498	32,790	157,617	913,043	902,956	10,087	3,799,381
2003	1,750,817	1,614,195	25,242	111,380	1,137,466	1,114,191	23,275	4,412,732
2004	2,114,491	1,834,694	25,783	254,014	1,584,426	1,555,996	28,430	4,942,797
2005	2,245,428	2,032,044	29,566	183,818	1,905,426	1,882,641	22,785	5,282,799
2006	2,541,208	2,186,500	42,401	312,307	2,284,236	2,253,678	30,558	5,539,771
2007	2,606,324	2,327,729	46,186	232,409	2,713,208	2,680,810	32,398	5,432,887
2008	2,862,828	2,575,236	57,519	230,073	3,228,964	3,185,033	43,931	5,066,751
2009	2,993,735	2,692,772	62,207	239,756	4,529,731	4,490,825	38,606	3,531,055
2010	2,978,613	2,716,552	261,810	251	4,158,506	4,117,101	41,405	2,351,162
2011	3,573,836	3,395,729	177,294	813	4,187,589	4,132,290	55,299	1,737,409

Notes: 1) "Other revenue" refers to the sum of loans recovered and miscellaneous profits.
2) "Other expenditure"refers to the sum of refunds and operating costs.

〈Table 4-25〉 Fluctuations in the UI Fund for employment security and occupational competency development programs

(Unit: KRW 1 billion)

	Revenue				Expenditure			Year-end reserve fund (F)
	Total revenue (A+B+C)	Insurance contribution (A)	Other revenue[1] (B)	Interests (C)	Total expenditure (D+E)	Insurance operating cost (D)	Other expenditure[2] (E)	
2000	985,977	850,791	33,747	101,439	637,273	630,207	4,514	1,500,554
2001	1,195,284	1,041,250	46,612	107,422	667,263	662,541	4,722	2,028,575
2002	1,271,748	1,109,020	53,198	109,530	687,227	680,828	6,399	2,613,096
2003	1,115,259	979,406	59,091	76,762	713,352	696,078	17,274	3,015,003
2004	1,280,438	1,045,611	61,208	173,619	789,670	770,181	19,489	3,505,771
2005	1,358,011	1,147,535	80,075	130,401	1,026,908	1,014,430	12,478	3,836,874
2006	1,556,267	1,226,254	102,930	227,083	1,569,435	1,553,877	15,558	3,823,706
2007	1,553,056	1,309,623	111,362	132,071	2,022,601	2,004,406	18,195	3,354,161
2008	1,643,034	1,393,266	107,555	142,213	1,846,699	1,815,109	31,590	3,150,496
2009	1,771,726	1,496,451	126,448	148,827	2,195,108	2,174,557	20,551	2,727,114
2010	1,792,112	1,501,839	179,189	111,084	1,842,578	1,823,915	18,663	2,676,648
2011	2,033,317	1,648,941	252,039	132,337	1,746,323	1,722,566	23,757	2,963,642

Notes: 1) "Other revenue" refers to the sum of loans recovered and miscellaneous profits.
2) "Other expenditure"refers to the sum of refunds and operating costs.

(2) Changes in UI program rates

The insurance rate for the employment security program was raised from 0.2 to 0.3 percent, and for unemployment benefits from 0.6 to 1.0 percent, in 1999. These rather dramatic rate increases, coupled with the abrupt rise in employment starting in late 1999, radically cut UI expenditure and boosted revenue and the reserve fund. The rate for the employment security program was lowered from 0.3 to 0.15 percent, and for unemployment benefits from 1.0 to 0.9 percent, in January 2003.

〈Table 4-26〉 Changes in UI program rates

(Unit: %)

	1995～1998	1999～2002	2003～2010	2011～
Employment security program	0.2	0.3	0.15	0.15
Occupational competency development program	0.1/0.3/0.5/0.5 (0.2259)	0.1/0.3/0.5/0.7 (0.3740)	0.1/0.3/0.5/0.7 (0.3506)	0.1/0.3/0.5/0.7 (0.35)
Unemployment benefits	0.6	1.0	0.9	1.10
Total	1.0259	1.6740	1.4006	1.60

Notes: 1) The occupational competency development program offers four different rates, applied to businesses of different sizes (i.e., businesses employing fewer than 150 people each; "preferred" businesses employing 150 or more people each; businesses employing 150 to 999 people each; and businesses employing 1,000 or more people). The figures in parentheses indicate the average rate applied to businesses of all sizes in the given years.
2) The rates for 2011 are those that took effect in April 2011. The rate for the occupational competency development program that year is an estimate.
3) The accounts for the employment security and occupational competency development programs were merged as of January 1, 2006.

Since late 2009, the reserve fund for unemployment benefits has consistently fallen short of the required amount stated in the UI Act (i.e., 1.5 times the annual expenditure). The balance of the unemployment benefits account continued to deteriorate due to the dramatic increase in the number of UI participants, wage growth, and the rapid increase in the amount of expenditure on benefits for working mothers. Expenditure is likely to exceed revenue in this account again notwithstanding signs of economic recovery. The rate for unemployment benefits was thus raised from 0.9 to 1.1 percent on April 1, 2011. The unemployment benefits account, in the meantime, continued to record deficits of KRW 106.9 billion in 2007; KRW 1.5356 trillion in 2009; and KRW 613.8 billion in 2011. Rates for employment security and occupational competency development programs remained the same.

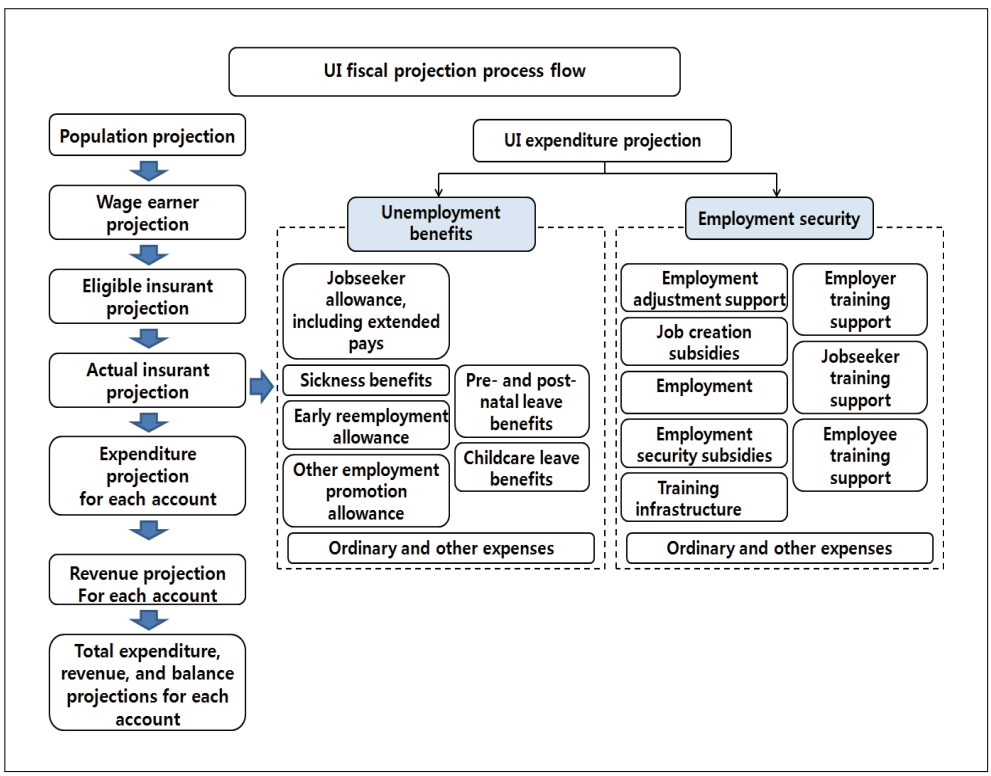
C. UI projection model and method

The overall long-term UI fiscal projection model involves applying a basic fiscal projection model and producing separate projections for the employment rate, the number of beneficiaries, and the amounts of expenditure and revenue. The employment rate and the number of beneficiaries are estimated until 2060 on the basis of future

trends in the population and in the workforce. The amounts of annual revenue and expenditure are then estimated on the basis of the wage information on each insurant as well as the wage growth rate, with given insurance contribution and rates applied in turn.

Demographic changes and patterns affect the workforce structure and are reflected in the numbers of wage earners and insurants, as well as in the amounts of jobseeker allowances, maternity protection costs, elderly employment subsidies, etc.

〔Figure 4-16〕 UI fiscal projection model



Source: Proceedings from the fourth meeting of the Subcommittee for Fiscal Projection of Social Security.

① Unemployment benefits and the maternity protection program

The long-term fiscal projection model used for unemployment benefits and the maternity protection program considers labor market variables, macroeconomic variables, un-

employment benefit and maternity protection program expenditures, revenue from insurance contribution, interests, total revenue, and the accumulated reserve at year's end.

The labor market and macroeconomic variables together form the model's macroeconomic variables and decide the exogenous variables to be used in expenditure and revenue projections. Expenditures for unemployment benefits and maternity protection are estimated on the basis of these exogenous variables and operational experiences given labor market institutions. Insurance premium revenue can be estimated by adding up the wages of all eligible participants, and multiplying the sum by given insurance rates. Finally, the returns on fund investment, total revenue, and average balances are estimated, as is the balance between the estimated expenditure and the estimated revenue, from insurance contribution to obtain the amount of accumulated reserve by year's end.

Unemployment benefits include jobseeker allowances (including extended pays), sickness benefits, early reemployment allowances, and employment-inducing allowances. The maternity protection program provides pre- and post-partum leave benefits and childcare leave benefits. Jobseeker allowances are estimated by adding the number of new beneficiaries at each age to the logistic model, and multiplying that amount by the average number of benefit-paid days as well as the rate of increase in the amount of benefits per capita. Sickness benefits are estimated as a certain ratio of jobseeker allowances. Employment-inducing allowances are estimated on the basis of early reemployment allowances (forming the largest spending item by far). Early reemployment allowances are estimated by first identifying the ratio of early re-employed beneficiaries to jobseekers, and then multiplying that ratio by the average number of benefit-paid days and the amount of benefits paid.

The amount of pre- and post-partum leave benefits that are part of the maternity protection program are estimated by first identifying the ratio of leave-takers to insurants, and adding that ratio to the logistic model, while taking into account demographic changes in the population aged 19 to 49, as well as the average number of benefit-paid months and the average amount of benefits paid per capita. The amount of childcare leave benefits is estimated on the basis of the assumption that the number

of leave-takers and the average number of benefit-paid months will increase.

Unemployment benefit revenue is derived from insurance contribution, interests, and other types of profits. Insurance premium revenue is estimated by multiplying the annual wages of insurants by the number of insurants and the given insurance rate.

② Employment security and occupational competency development programs

The employment security program provides support and benefits for employment adjustment, job creation, elderly employment, women's employment, and the like, and incurs costs relating to employment inducement and security, and institutional and infrastructural supports. The amount of employment adjustment subsidies is estimated per capita by deriving the number of beneficiaries, assuming that the ratio of beneficiaries will remain even. The amount of job creation subsidies is projected by first estimating the number of beneficiaries, assuming that the ratio of beneficiaries will remain even relative to the economic growth rate. The subsidies for elderly employment are estimated based on the assumption that the number of beneficiaries (age 56 to 65) will increase over time due to the aging of the Korean population. Subsidies for women's employment are estimated based on the assumption that the number of beneficiaries will increase parallel to the rise in the number of those taking childcare leave. The amounts of other related operating expenses and institutional and infrastructural supports are estimated based on a fixed cost ratio.

Expenditure for the occupational competency development program includes the costs of employer training, jobseeker training, employee training, occupational development programs, and institutional and infrastructural supports. Expenditure projections for employer and employee training are based on the assumption that the participation rate among eligible insurants will remain even, and involve estimating the number of applicants based on the foregoing assumption. Expenditure projections for jobseeker training similarly assume that the participation rate will remain even. The costs of other occupational competency development projects, and institutional and infrastructural supports are projected as certain ratios of the total expenditure for

the occupational competency development program.

Revenue for the employment security and occupational competency development programs is estimated on the basis of the sum of all eligible participants' wages and the given insurance rates. Fund investment returns, total revenue, the average balance, expenditures, and the amount of insurance contribution are applied to arrive at the estimated balance between expenditure and revenue, and to derive the amount of accumulated reserves by year's end.

D. Major inputs for UI fiscal projections

① Number of wage earners

The number of wage earners is estimated by applying the assumptions of the monomolecular model. In 2000, wage earners made up 63 percent of the workforce. By 2011, the figure rose by 8 percent to reach 71 percent. The unemployment benefit program requires estimations on the number of wage earners under age 65, assuming that participants will pay their insurance contribution until age 65. The program therefore utilizes the proportion of the under-65 population in the workforce distributed by age. As for the proportions of full- and part-time workers, those fitting the logistic distribution are used.

② Eligible participants and beneficiaries

All employees are eligible for UI, with the exception of the following: persons at age 65 or over[29]; and persons who work less than 60 hours in a given month.[30]On the other hand, over-age persons who provide their services for three months or longer for the purpose of earning a living, and daily workers who are employed for less than a month, can benefit from UI. Participants and beneficiaries of the GEPS (except for special-post or contract-based government employees, since September 22, 2008),

29) Persons 65 years old or older can still benefit from the employment security and occupational competency development programs, but cannot receive unemployment benefits.

30) Including persons who have worked for less than 15 hours a week.

the PSTP, and the Special Post Office Pension, are also excluded from the duties and benefits of UI.

The number of GEPS and PSTP participants and beneficiaries who are not eligible for UI is projected on the basis of estimates on long-term population changes. The ratio of GEPS and PSTP participants to full- and part-time workers is applied to the projection. We referenced workforce surveys which show the ratio of part-time workers (15 hours per week, maximum 60 hours per month), and applied logistic distribution to this ratio to arrive at the number of persons working less than 60 hours per month.

③ Number of insurants

The number of insurants is estimated by applying the projected insurant ratio to the projected number of all eligible persons. The estimated participation rate should be applied to the logistic distribution.

④ Insurants' wages

The amount of wage per insurant is estimated using the insurance premium amount per insurant, the applied insurance rate, and the number of insurants.

⑤ Other variables for insurance premium projections

The amount of insurance contribution to be collected is estimated by multiplying the wage per insurant by the insurance rate and the number of insurants. Projections for this study use the same insurance rate throughout the subject period. Other types of profits are estimated on the basis of the ratios of miscellaneous profits and loans recovered to the amount of insurance contribution and interests combined, and by applying the average rate over the three preceding years (or four preceding years, in the case of the employment security and occupational competency development programs). Other types of expenditure include operating costs and refunds.

2. Workers Compensation Insurance (WCI)

A. WCI projections overview

Article 7.2.2 (“Development of Long-term Fiscal Plans, etc.”) of the National Finance Act and Article 2.3 of the Enforcement Ordinance for the same Act, as well as Article 99.3 (“Accumulation of Mandatory Reserves”) of the Industrial Accident Compensation Insurance Act (IACIA) and Article 90.3 (“Criteria for Deciding the Amounts of Mandatory Reserves, etc.”) of the Enforcement Ordinance for the IACIA require long-term workers compensation insurance fiscal projections. A fiscal projection subcommittee was recently assembled for this purpose. Article 97 of the IACIA also details regulations regarding the investment and management of the WCI Fund.

B. General

(1) Current state of the WCI Fund

WCI revenue and expenditure have each been on the rise for some time. The WCI Fund recorded deficits from 2003 to 2005, but has maintained a surplus ever since. The WCI Fund’s reserve amounted to KRW 6.3 trillion in 2011, with a reserve rate of 178 percent.

〈Table 4-27〉 Changes in the WCI Fund

(Units: KRW 100 million, %)

		2003	2004	2005	2006	2007	2008	2009	2010	2011
Fiscal balance	Revenue	27,112	31,278	35,038	41,083	48,120	52,987	52,386	50,299	51,946
	Expenditure	29,607	33,688	36,752	38,612	39,823	41,846	42,096	43,331	44,938
	Balance	△2,495	△2,410	△1,714	2,471	8,297	11,141	10,290	6,968	7,008
Mandatory reserve (A)		27,390	34,038	41,181	49,649	57,826	32,423	34,219	34,631	35,237
Reserve (B)		19,955	18,537	16,783	19,315	27,171	38,312	48,602	55,570	62,577
Reserve rate		72.9	54.5	40.8	38.9	47	118.2	142	160.5	177.6
(B) −(A)		△7,435	△15,501	△24,398	△30,334	△30,655	5,889	14,383	20,939	27,340

Expenditure for WCI has been increasing due to the consistent rise in the number of beneficiaries. However, the rate of increase in both has slowed recently.

〈Table 4-28〉 Changes in WCI beneficiaries and benefit amount

(Units: KRW 100 million, %)

		2003	2004	2005	2006	2007	2008	2009	2010	2011
beneficiaries		180,441	189,275	196,515	206,333	211,284	240,520	252,035	253,279	275,585
WCI benefits	Amount	24,818	28,601	30,258	31,638	32,423	34,219	34,631	35,237	36,254
	Rate of increase	22.8	15.2	5.8	4.6	2.5	5.5	1.2	1.7	2.9

(2) Changes in average insurance rate

The average insurance rate for WCI grew at a rate of 9 percentage points yearly between 2003 and 2008, reaching as high as 1.95 percent. But it began to drop in 2009, and fell to 1.77 percent by 2011.

〈Table 4-29〉 Changes in WCI average insurance rate

(Unit: %)

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Insurance rate	1.36	1.48	1.62	1.78	1.95	1.95	1.8	1.8	1.77
Rate of increase	△8.7	8.8	9.5	9.9	9.6	-	△7.7	-	△1.7

(3) Amounts of WCI benefits

WCI benefits can be divided between long-term and short-term ones. The former include incapacity-related benefits, survivor benefits, injury and illness compensation pensions, and black-lung compensation pensions. The latter include medical care benefits, business closure benefits, nursing benefits, funerary expenses, and rehabilitation expenses.

〈Table 4-30〉 Types of WCI benefits

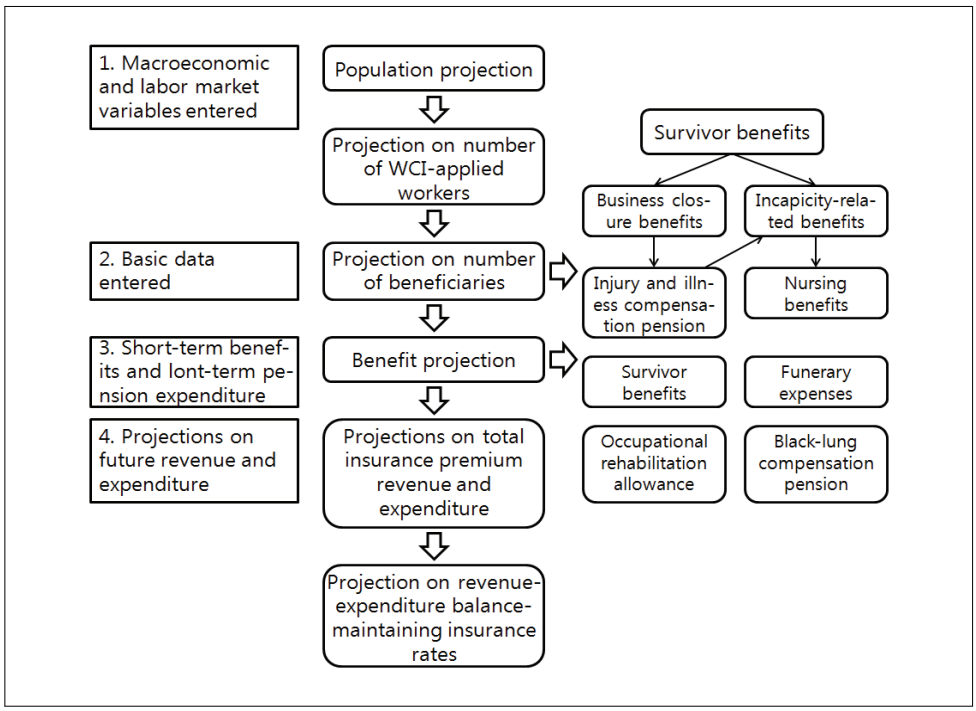
Term	Type	Description
Long-term	Injury and illness compensation pensions	• Paid to workers who have sustained injuries/illnesses of Grades 1 to 3, and have endured a recuperation period of two years or more
	Incapacity-related benefits	• Paid as pensions or in lump sums to workers who have completed a given course of medical treatment, but who remain incapacitated
	Black-lung compensation and survivor pensions	• Paid to workers who have sustained lung damage (pneumoconiosis) on the job • Paid to the surviving family members of workers who have died due to black-lung disease
	Survivor benefits	• Paid to the surviving family members of workers who have died due to work-related injuries or illnesses
Short-term	Nursing benefits	• Paid to patients who require around-the-clock or frequent nursing assistance after a given course of medical treatment is completed
	Occupational rehabilitation allowances	• Paid to recipients of incapacity-related benefits or persons in recuperation in Incapacity Grades 1 to 12 • Paid to persons under age 60 and unemployed, who are ineligible for other rehabilitation programs
	Funerary expenses	• Paid to the surviving family members of deceased workers to cover funerary expenses
	medical care benefits	• Paid to workers at WCI-applied workplaces who have endured a recuperation period of four days or more due to work-related injuries or illnesses
	Business closure benefits	• Paid to business owners to compensate for parts of losses resulting from recuperation

C. WCI projection model and method

The first step involves entering the chosen macroeconomic and labor market variables. The estimated number of WCI-participating workers, based on future population estimates, is entered. Then the number of future WCI-applied workers and the total amount of benefits to be paid are projected. Finally, the amounts of yearly WCI revenue and expenditure (by benefit type) are projected.

The projection model for the WCI is designed based on reviews of related models used in Korea and globally. It is a modification of the basic revenue-expenditure projection model that allows the user to enter the number of participants, the amount of insurance contribution, and the amounts of expenditure on different insurance benefits by turn. Data related to important changes or events in time should be taken into account so that the resulting projections reflect likely changes.

〔Figure 4-17〕 Long-term WCI fiscal projection model



Source: Proceedings from the fourth meeting of the Subcommittee for Fiscal Projection of Social Security.

① Number of beneficiaries and benefit amounts

The number of beneficiaries for, and the amounts of such long-term benefits as incapacity-related benefits, survivor benefits, illness/injury compensation pension, and black-lung compensation pension are estimated on the basis of the number of beneficiaries in the current year, the amount of benefits per capita from the preceding year, and the wage growth rate. The number of beneficiaries in the current year is the sum of new and continued beneficiaries. Incapacity-related benefits can be paid either as a pension or a lump-sum payment, depending on the severity of incapacity, and should be reflected as such in the projection model.

The number of beneficiaries for, and the amounts of such short-term benefits as medical care benefits, business closure benefits, nursing benefits, funerary expenses, and rehabilitation allowances should similarly be based on the number of beneficiaries in the current year, the amount of benefits per capita from the preceding year, and

the wage growth rate. The number of continued beneficiaries can be predicted by taking into account the past rate at which new beneficiaries left the WCI system. The amount of medical care benefits can be estimated using the inflation rate[31] instead of the wage growth rate. The long-fitted value of the rate of increase in NHI-applied medical fees should be considered, as it can affect the recuperation cost.

② Total expenditure

Total expenditure for WCI consists of spending on insurance benefits, and other expenses including refunds; the costs of the programs of the Korea Workers' Compensation and Welfare Service (KCOMWEL), the Korea Occupational Safety and Health Agency (KOSHA), and the National Health Insurance Service; loans for ill or injured workers; loans for preventing occupational hazards; and fund management expenses.

③ Total revenue

Total revenue for WCI is the sum of insurance contribution, interests, and other types of profits. The revenue from insurance contribution is estimated by multiplying the remuneration per capita (already reflecting the revenue rate) by the average insurance rate. The sum of other profits can be estimated by applying the average ratio of other profits to the sum of insurance contribution over the four preceding years. The sum of interests can be estimated on the basis of the amount of the WCI Fund and the rate of returns on fund investments each year.

31) One may take into account changes in health insurance-applied medical fees to predict the rate of increase in the cost of recuperation. However, the margins of increase in medical fees have changed dramatically in the past, with the fee schedule gaining a measure of stability only as late as 2002. The long-fitted values are therefore quite distorted. As a result, the projections for this study utilize the inflation rate from Statistics Korea instead. Additional data analyses will be required in this regard in the future.

〈Table 4-31〉 Changes in the total amount of remuneration per capita (reflecting the revenue rate)

Year	Insurance contribution revenue	Number of workers	Average insurance rate	Total remuneration per capita
2008	KRW 4.8460 trillion	13,489,986	19.5□	KRW 18,422,043
2009	KRW 4.7364 trillion	13,884,927	18□	KRW 18,950,937
2010	KRW 4.6353 trillion	14,198,748	18□	KRW 18,136,532
2011	KRW 4.7270 trillion	14,362,372	17.7□	KRW 18,594,571

④ Fiscal balance rate

The fiscal balance rate is used to maintain a proper balance between WCI revenue and expenditure. The WCI announces a new fiscal balance rate every year according to the Occupational Health and Safety Insurance Act. It is therefore unnecessary to produce long-term projections on the fiscal balance rate of this insurance, unlike in the case of other insurances.

D. Projection inputs

(1) Major projection inputs for the SCI

The major projection bases are those that significantly influence the projection results. In the case of the WCI, these include the coverage rate, the accident rate, and the rate of returns on fund investment, among others.

First, the coverage rate refers to the ratio of workers to whom the WCI applies. To estimate this rate, the ratio of wage earners[32]to the total workforce is identified. Then the ratio of WCI-applied workers to the total number of wage earners is estimated.

Second, the accident rate refers to the ratio of new WCI beneficiaries to the total

32) While in general the number of participants is estimated on the basis of workforce size, the WCI application rate is estimated on the basis of the number of wage earners because the Occupational Health and Safety Insurance Act specifically confines the WCI's application to wage earners.

number of WCI beneficiaries. The number of new beneficiaries is estimated on the basis of data provided by the KOSHA and the ratio of injured/ill workers provided by the KCOMWEL.[33]The accident rates of main OECD countries have been compared to ensure the rationality of projection results.

〈Table 4-32〉 Accident rates in major OECD countries (as of 2008)

	Korea	Japan	Germany	United States	United Kingdom (2008/2009)
Accident rate (%)	0.84	0.25	2.87	3.46	0.50
Ratio of accident-caused deaths per 10,000 workers	1.07	0.23	0.20	0.38	0.05

Source: Statistics Korea (As each government uses different statistical methods, application scopes, industrial distributions, and work-related accident definitions, simple comparison is impossible.)

Third, the rate of return on fund investment is determined by identifying the investment and administration patterns of the WCI Fund. The WCI requires a monetary amount that equals the total amount of insurance benefits provided in the preceding year as the mandatory reserve for the subsequent year. The amount of the mandatory reserve therefore needs to be taken into account in estimating the insurance rate, while the surplus from the reserve should be included in revenue.

(2) Other projection inputs

Other projection inputs for the WCI include the mortality rate, the incapacity rate, and the existing survivor ratio. The mortality rate refers to the ratio of deceased persons to the total number of eligible workers, and was estimated on the basis of the KOSHA's data on accident-related deaths.[34]

The incapacity rate[35]refers to the ratio of recuperation benefit recipients who

33) KOSHA data were used to supplement the data on accident rates from the KCOMWEL, because the latter's data are based on a relatively short period of time.

34) KCOMWEL keeps data on deceased workers for the period after 2005(these data are shared with the Ministry of Public Administration and Safety). Because KCOMWEL data are based on the entire population of South Korea, KCOMWEL ends up counting the number of all deceased persons, and not just the number of persons who died in work-related accidents. Therefore, it is necessary to utilize the KOSHA's statistics on the number of people who died in major work-related accidents or disasters in producing long-term projections for the WCI.

are declared as incapacitated or disabled, and who thus become recipients of incapacity benefits. It is estimated by multiplying the current year's number of recuperation benefit recipients by the average number of new incapacity benefit recipients over the preceding three years.

The existing survivor ratio[36]refers to the ratio of workers with benefit-eligible surviving family members to the total number of workers who have died in work-related accidents. It is based on this ratio that the number of new survivor benefit recipients is estimated.

35) To ensure accurate projections of incapacity-related benefits, it is necessary to determine the incapacity rates and survival rates for different levels of incapacity. This year marks the first time long-term budget projections were made with respect to the WCI, and the dearth of required data in this regard will have to be overcome in future studies.

36) The projections herein rely on the number of deceased persons as announced by the KOSHA. That number, however, also includes persons who died in accidents that are not work-related. The reason the number of new survivor benefit recipients is greater than the KOSHA number of deceased persons is that, whereas the KOSHA counts deceased persons in terms of the actual dates of death, KCOMWEL counts deceased persons in terms of the dates on which their survivors begin to receive benefits. Persons who die in the current year, but whose surviving family members begin to receive benefits in the subsequent year, are not included in the death rate until the subsequent year.

5

Chapter

Projections of Social Expenditure Finance by General Revenue (other than Social Insurance)

1. Programs for structured long-term projection model
2. Programs for simple projection model

5 Projections of Social Expenditure Finance by General Revenue (other than Social Insurance)

Ⅰ. Programs for structured long-term projection model

Structured actuarial projection models were required for long-term benefits heavily impacted by the declining birth rate, the aging population, and the low economic growth rate, such as disability, childcare, and elderly care policy programs. More specifically, disability policy measures include the disability pension, disability benefits, and support for the activities of persons with disabilities. Childcare policy measures include childcare subsidies (Nuri Curriculum[37]), home childcare allowances, nursing and care services, and childcare assistance. Policy measures for the elderly include basic elderly care services, general elderly care services, and the u-Care system for seniors living alone. Since social programs other than social insurances are administered by local government, this chapter considers expenditure made by central government by multiplying share ratio.

1. Disability policy programs

A. Projection overview

Benefits provided under the disability policy include disability pensions(non-contributory) for persons incapable of working, disability benefits, and ALMPs for persons with disabilities. The basic rates required for projections of these benefits include the rate of increase in the amount of benefits per capita; the rate of increase or decrease in the number of beneficiaries; the ratio of persons with disabilities receiving benefits; and the rate of increase or decrease in the number of registered persons with disabilities.

37) Nuri Curriculum is a public program which supports childcare and education costs for children aged 3 to 5 attending a kindergarten or a daycare center.

This study applies the economic growth rate as determined by the Subcommittee for Fiscal Projection of Social Security for the first of these three program rates.

〈Table 5-1〉 Disability programs in the 2013 budget reflected in the projection model

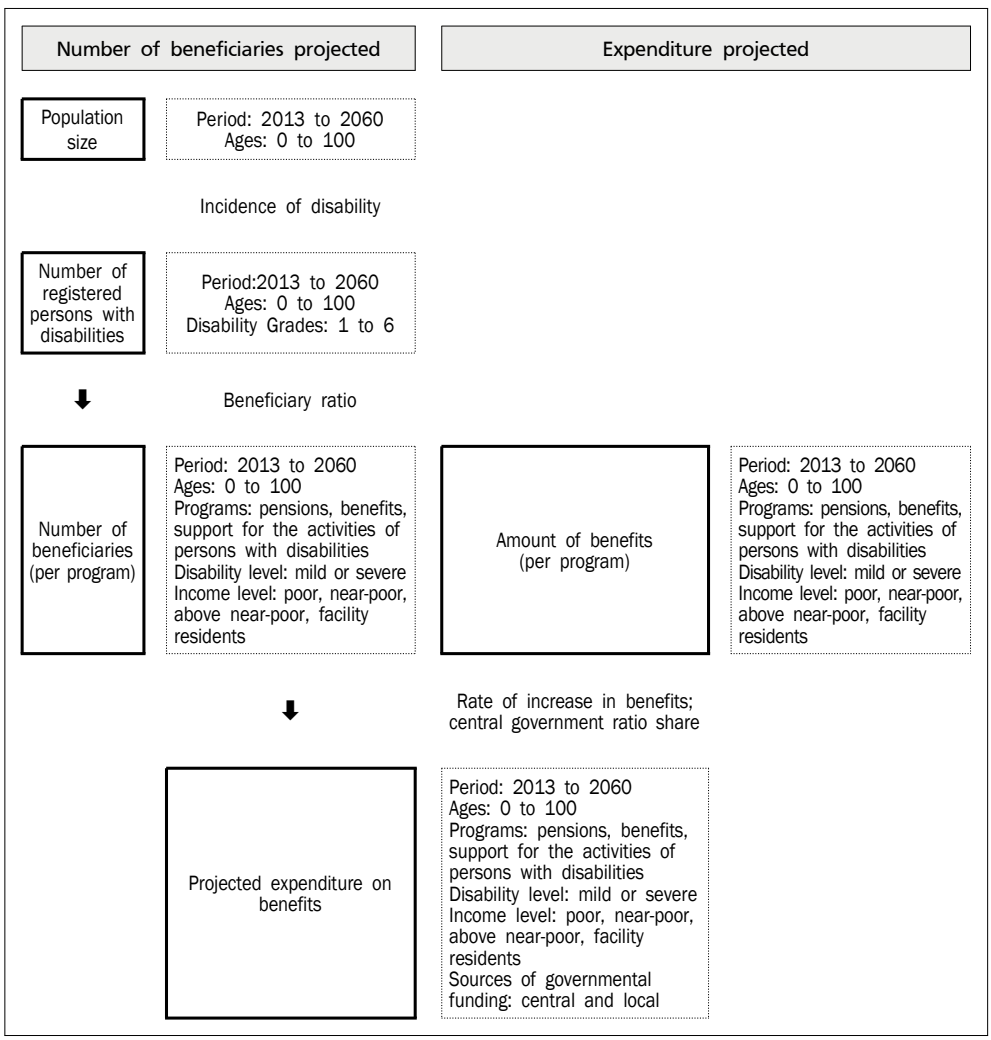
Type	Basic rates (as program variables)	Input variables from other projection models	Included in the projection model?	SOCX category
① Disability pension	• Rate of increase/decrease in number of registered persons with disabilities • Ratio of persons with disabilities receiving benefits • Rate of increase in amount of benefits per capita	• National Pension benefit formula A-value[2] (not applicable if the economic variables used here differ from those used in National Pension projections)	Included	Incapacity -related benefit
② Disability benefits	• Increase/decrease in ratio of persons with disabilities receiving benefits • Rate of increase in amount of benefits per capita		Included	
③ Benefits in support of the activities of disabled[1]	• Increase/decrease in ratio of persons with disabilities receiving benefits • Rate of increase in amount of benefits per capita		Included (but not the costs of contracted projects and operation)	ALMPs

Note: 1) Of the central government's 2013 budget of KRW 382.9 billion set aside to support the activities of persons with disabilities, the costs of contracted projects and operations (KRW 14.8 billion) were excluded from this model.
2) A-value is average pension benefit from of recipients from basic portion of benefit formula (other than earnings-related)

B. Expenditure projections

The figure below illustrates the process of deriving projections for expenditure on disability pensions, disability benefits, and supports for the activities of persons with disabilities. First, the number of beneficiaries for each category of benefits is estimated. This involves determining the number of registered persons with disabilities by multiplying the future population size by Statistics Korea's incidence of disability. The beneficiary ratio of each category is then applied to the number of registered persons with disabilities. The amount of expenditure is then projected by applying the amount of benefits, the rate of increase in benefits, and the central government share ratio to the number of registered persons.

〔Figure 5-1〕 Disability program expenditure projections



(1) Number of registered persons with disabilities

The number of registered persons with disabilities is estimated by applying the incidence of disability to each gender, age, and disability-level group. The number of registered persons with disabilities grew rapidly until 2010 or so, before the disability level review system was introduced and slowed the upward trend. The rate of increase in the number of persons with disabilities registered even dropped slightly in 2012.

The figure was projected based on the assumption that the current ratio of registered persons with disabilities (as of 2012) will remain in the future, and by taking into account natural increases and decreases in the overall population.

〈Table 5-2〉 Ratio of registered persons with disabilities to the overall population[1] (year-end 2012)

Age group	Severe[2]	Mild	Total
0 to 17	0.5%	0.3%	0.8%
18 to 64	1.0%	3.2%	4.2%
65 and above	3.0%	13.7%	16.8%
Overall incidence of disability	1.1%	3.9%	5.0%
Incidence of disability in population at age 18 and above	1.3%	4.7%	6.0%

Notes: 1) The incidence of disability was estimated by applying Statistics Korea future population projections, made as of the end of 2011.
2) "Severe" levels of disability refer to Disability Grades 1 through 3, and cases of multiple severe disabilities.

(2) Disability pension (non-contributory)

The number of disability pension beneficiaries was projected by assuming that 63 percent of persons with severe disabilities at age 18 or above were entitled to minimum living security benefits,[38] as well as additional benefits. The beneficiary ratio refers to the proportion of actual beneficiaries in the total number of registered persons with severe disabilities. The 63 percent of persons with severe disabilities and low income were then divided into groups according to age (18 to 64, and 65 and above) and income levels (poor, near-poor, above near-poor, and facility residents).

〈Table 5-3〉 Distribution of disability pension beneficiaries by income level (2011 budget)

Poor	Near-poor	Above near-poor	Facility residents	Total
42.9%	14.4%	32.8%	9.8%	100%

Source: MOHW (2011). *Report on the Budget and Fund Appropriation Plan 2011*. The report estimates the beneficiary ratio based on statistics on 327,000 beneficiaries of disability pensions.

38) Paid to persons under age 65. Persons aged 65 or above begin to receive basic old age pensions.

To project expenditure for disability pension benefits, the amounts of basic and additional benefits are estimated first. In estimating basic benefits, the underlying assumption is that the rate of increase in the National Pension formula A-value[39] will apply yearly. The amount of additional benefits is estimated separately for each age and income-level group, and is assumed to grow at the economic growth rate.

(3) Disability benefits

There are two types of beneficiaries of disability benefits: those receiving mild disability benefits, and those receiving children with disabilities benefits. The number of mild disability benefit recipients is based on the number of minimum living security (poor) and near-poor benefit recipients among persons with mild disabilities aged 18 and over.

〈Table 5-4〉 Beneficiary ratios for disability benefits (2013 budget)

	Poor	Near-poor	Facility residents	Total
Ratio of beneficiaries age 18 and above to persons with mild disabilities	14.4%	6.8%	0.7%	22.0%

Source: MOHW (2013). *Report on the Budget and Fund Appropriation Plan*. The report estimates the beneficiary ratio based on statistics on 334,000 beneficiaries of mild disability benefits.

The number of recipients of children with disabilities benefits is based on the number of minimum living security (poor) and near-poor benefit recipients among persons with disabilities aged 18 and under.

〈Table 5-5〉 Beneficiary ratios for children with disabilities benefits (2013 budget)

	Disability level	Poor (recipient of public assistance)	Near-poor	Facility residents	Total
Ratio of beneficiaries among all registered persons under age 18	Mild	6.5%	3.4%	1.2%	11.2%
	Severe	10.7%	6.7%	4.6%	22.0%

Source: MOHW (2013). *Report on the Budget and Fund Appropriation Plan*. The report estimates the beneficiary ratio based on statistics on 25,000 beneficiaries of children with disabilities benefits.

39) Applies the inflation rate to the average income (reflecting the wage growth rate) of all National Pension participants over the three preceding years.

The amount of children with disabilities benefits paid out is assumed to increase at the same rate as the economic growth rate, irrespective of income level.

(4) Support for the activities of persons with disabilities

Persons eligible to receive this benefit are registered persons with disabilities between the ages of 6 and 64[40] who are considered Disability Grade 1 or 2 and are recognized by the government as unable to perform activities of a social nature by themselves.[41]

〈Table 5-6〉 Beneficiary ratios for activity support (2013 budget)

	Disability Grade 1	Disability Grade 2	Total
Ratio among all persons with disabilities aged 6 to 64	26.0%	3.5%	13.0%

Source: MOHW (2013). *Report on the Budget and Fund Appropriation Plan*. The report estimates the beneficiary ratio based on statistics on 48,000 activity support beneficiaries.

The amount of this support is assumed to increase at the same rate as the economic growth rate.

C. Results of expenditure projections on disability programs

〈Table 5-7〉 Disability program expenditure projections

(Unit: KRW 1 trillion)

Year	Total (ratio to GDP)	Total (A+B+C)	Disability pension (A)	Disability benefits (B)	Support for activities (C)
2013	0.093%	1.2	0.5	0.2	0.5
2020	0.124%	2.6	1.5	0.3	0.9
2025	0.134%	3.8	2.3	0.4	1.1
2030	0.141%	5.0	3.1	0.6	1.3
2035	0.140%	6.1	3.9	0.7	1.5
2040	0.138%	7.1	4.6	0.9	1.7
2045	0.136%	8.2	5.4	1.0	1.9
2050	0.132%	9.4	6.2	1.2	2.0
2055	0.129%	10.6	7.0	1.4	2.2
2060	0.124%	11.7	7.8	1.5	2.3

40) Persons aged 65 or above begin to receive basic old age pensions.

41) These are persons who score 220 or higher on the Disability Grade Recognition Test (testing the ability to perform daily functions and activities). The test divides persons with disabilities in need of activity support into four levels.

2. Childcare policy programs

A. Projection overview

The 2013 central government provides childcare subsidies (for three- to five-year-olds enrolled in the Nuri Curriculum), home childcare allowances, childcare services, and childcare assistance. Of these, only the childcare assistance program falls under the category of ALMPs according to the SOCX definition. All others fall under the category of family benefits.

〈Table 5-8〉 Childcare programs in the 2013 budget reflected in the projection model

Program	Projects / benefits	Included in the projection model?	SOCX category
① Childcare subsidies (for 3~5-year-olds enrolled in Nuri Curriculum)	• Childcare subsidies for children ages 0 to 5 • Free education and childcare for children with disabilities • Subsidies for extended-hours childcare	Included	Family
	• Hour-differentiated childcare service (pilot program) • Surveys on housewives and working mothers	Not included	
② Home childcare allowances	• Allowances for children not enrolled in nurseries • Rural community childcare allowances[1)] • Allowances for children with disabilities	Included	
③ Childcare services	• Teachers at national/public/private nurseries • Infant-specialized teachers • Teachers specializing in, or capable of caring for, children with disabilities • After-school program teachers • Extended-hours teachers	Included	
④ Childcare assistance		Included (but excluding administrative cost[2)])	ALMP

Notes: 1) To be provided in the same amount as the amount for children not enrolled in nurseries, beginning in 2014.
2) Of the central government's 2013 budget of KRW 66.6 billion for childcare assistance, the operating and administrative cost of KRW 10.9 was excluded from the projection model.

Beneficiaries of childcare subsidies for children aged zero to five enrolled in the Nuri Curriculum comprised the vast majority (62.2 percent) of all childcare program beneficiaries in the 2013 budget. Recipients of home childcare allowances made up

37.7 percent, and beneficiaries of childcare assistance (for infants at age zero), 0.1 percent.

Children attending nurseries or kindergartens are subjects of childcare subsidies, while children staying at home are subjects of home childcare allowances. All children between the ages of zero and five are subjects of available childcare benefits, irrespective of parental income levels. Children with disabilities who attend nurseries or other schooling institutions are eligible for childcare benefits up to the age of 12. Children with disabilities not attending such institutions receive benefits until they enter the school system (at age seven).

B. Expenditure projections

Benefit amounts for each childcare policy program are estimated by multiplying the amount of benefits per capita by the number of eligible beneficiaries, divided into groups according to gender, age, and whether or not they attend government-subsidized institutions or facilities. The number of eligible beneficiaries of each program is estimated by taking into account the size of the infant/ toddler population, and the nursery (or kindergarten) attendance rate.

- Number of eligible beneficiaries$_{y,g,a,d}$
  = Infant and toddler population$_{y,g,a}$ × Attendance rate$_{a,d}$

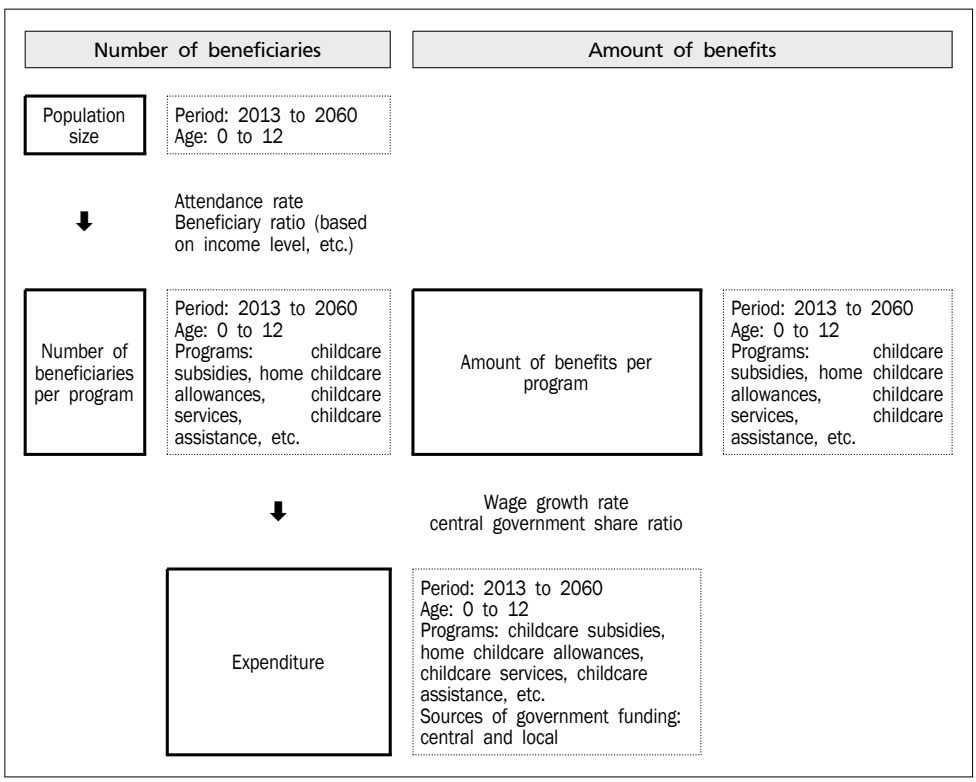
$$\text{Attendance rate}_{a,d} = \frac{\text{Number of attendees}_{2012,a,d}}{\text{Infant and toddler population}_{2012,a,d}}$$

- Number of beneficiaries of home childcare allowances$_{y,g,a,d}$
  = Infant and toddler population$_{y,g,a}$ × (1-attendance rate$_{a,d}$)
  × (1-childcare assistance use rate for age 0_a)

- Amount of benefits per capita$_{y,a,d}$
  = Amount of benefits per capita$_{y-1,a,d}$ × Rate of increase$_y$
  (Rate of increase: Follows yearly economic growth rate)

The following figure visualizes the process of projecting expenditure for childcare subsidies, home childcare allowances, childcare services, and childcare assistance. The amount of benefits per capita in each program is multiplied by the number of beneficiaries per program, and also by the wage growth rate and the central government share ratio.

〔Figure 5-2〕 Childcare policy program expenditure projections



(1) Childcare subsidies (for children aged three to five, enrolled in the Nuri Curriculum)

Childcare subsidies are provided for all children aged zero to five who are enrolled at childcare facilities (e.g., nurseries or kindergartens),[42] irrespective of parental income levels. The number of childcare subsidy beneficiaries was estimated on the ba-

42) Both nurseries and kindergartens for children age three or older.

sis of Statistics Korea future population projections, released at the end of 2011, as well as MOHW childcare statistics from 2012 (published in 2013).

〈Table 5-9〉 Ratio of attendees at nurseries and kindergartens (as of the end of 2012)

Age	0	1	2	3	4	5
All	12.6%	36.2%	83.7%	86.4%	87.4%	87.9%
Nurseries	12.6%	36.2%	83.7%	57.4%	40.0%	32.7%
Kindergartens				29.0%	47.4%	55.1%

Note: The attendance rate among infants at age zero or one was estimated by subtracting the number of home childcare allowance beneficiaries from the total number of children aged zero to five in Korea as of 2013. The attendance rate among children aged two to five is based on childcare statistics from 2012.

Source: Statistics Korea (2012). *Childcare Statistics 2011*; MOHW (2013). *Current Statistics on Recipients of Home Childcare Allowances*, as of June 2013.

The amount of childcare subsidies per capita is assumed to increase at the announced rate of increase of the Nuri Curriculum until 2016,[43] and at the economic growth rate afterward. In the 2013 budget the central government share ratio for these subsidies was 49.4 percent on average.

〈Table 5-10〉 Amount of childcare subsidies per capita in 2013

Age		Facilities receiving labor cost subsidies (per month, in KRW 1,000)			Facilities not receiving labor cost subsidies (per month, in KRW 1,000)			
		Total	Subsidized amount	Other	Total	Subsidized amount	Basic childcare cost (handled by facilities)	Other
0		394	394	-	755	394	361	-
1		347	347	-	521	347	174	-
2		286	286	-	401	286	115	-
3 to 5 (Nuri Curriculum)	Nurseries	290	220	70[1)]	290	220	-	70[1)]
	Kindergartens	60 (110)	60	50[2)]	220 (290)	220	-	70[2)]

Notes: 1) Part of nursery operating costs are subsidized to improve environments for and the treatment of teachers.
2) The figures in parentheses indicate the amount of subsidies for after-school programs at kindergartens.

Source: MOHW (2013). *Information on Eligible Beneficiaries of Childcare Subsidies and Home Childcare Allowances 2013.*

43) Announced increases in Nuri Curriculum childcare cost rates

The number of beneficiaries of childcare subsidies for children with disabilities is comprised of the number of children with disabilities under age 12 who attend nurseries or other facilities. The number of children with disabilities is based on projections of the number of registered children with disabilities. The nursery and kindergarten attendance rates of all children as of the end of 2012 was applied to the case of children with disabilities as well. Nurseries and kindergartens were then divided between those receiving labor cost subsidies (98.5 percent) and those not receiving such subsidies (1.5 percent).

〈Table 5-11〉 Ratio of children with disabilities attending nurseries (2012)

Age	0 to 5	6 or above
Ratio of children with disabilities attending nurseries to total number of children with disabilities	90.0%	18.0%

Sources: MOHW (2012). *Childcare Statistics*, 2013; MOHW (2013). *Report on the Budget and Fund Appropriation Plan.*

The amount of childcare subsidies per child with a disability is based on the 2013 amount,[44] and assumed to increase at the same rate as the yearly economic growth rate.

The beneficiaries of extended-hours childcare subsidies are children who continue to use nurseries or kindergartens past 19:30 on weeknights. Of the total population entitled to childcare subsidies in 2013, 4.3 percent fell under this category. The benefit amount for each beneficiary is also based on the average benefit amount of 2013, and assumed to grow at the yearly economic growth rate.

(2) Home childcare allowances

Children aged zero to five not attending childcare facilities are eligible for home childcare allowances. The amount of allowance per capita is based on the 2013 amount, and is assumed to grow at the yearly economic growth rate. The average National Treasury burden ratio for home childcare allowances was 48 percent in the 2013 budget.

44) The subsidized amount for each child with a disability in 2013 equaled the subsidized amount for each child at age zero without a disability.

〈Table 5-12〉 Amount of home childcare allowance per capita (2013 budget)

Age	0	1	2	3	4 and above
Basic amount (KRW)	200,000	150,000		100,000	
Rural community allowance (KRW)	200,000	177,000	156,000	129,000	100,000
Children with disabilities allowance	200,000			100,000	

Note: The basic amount is to be provided in the same amount as the rural community allowance, beginning in 2014.
Source: MOHW (2013). *Information on Eligible Beneficiaries of Childcare Subsidies and Home Childcare Allowances 2013.*

The rural community childcare allowance will be provided until the end of 2013 only, and merged with childcare allowances for infants and toddlers beginning in 2014. The beneficiaries of the rural community childcare allowance are children aged zero to five who reside in rural communities and do not attend nurseries or kindergartens. The beneficiary ratio was estimated on the basis of 2012 childcare statistics from the MOHW and based on the 2013 budget.

〈Table 5-13〉 Ratio of rural childcare allowance beneficiaries (2013)

	Ratio
Ratio of rural childcare allowance beneficiaries to total number of children aged zero to five not attending nurseries or kindergartens	1.6%

Sources: MOHW (2012). *Childcare Statistics*, 2013; MOHW (2013). *Report on the Budget and Fund Appropriation Plan.*

Children with disabilities aged zero to five not attending nurseries or kindergartens are beneficiaries of childcare allowances for children with disabilities.

(3) Childcare services

Childcare service subsidies are provided by the government to public and national childcare facilities and to private nurseries or kindergartens specializing in infants and children with disabilities to help cover labor costs. The amount of benefits provided per capita is assumed to grow at the yearly economic growth rate. The average central government share ratio is 48 percent of total expenditure, based on the 2013 budget.

The ratio of educators and caretakers at national, public, and private nurseries and kindergartens eligible for childcare service subsidies was estimated in the following manner. First, MOHW childcare statistics for 2012 and the 2013 budget were used to identify the proportion of beneficiaries of subsidized nurseries and kindergartens as 90 percent of all beneficiaries of such facilities. The ratio of childcare service beneficiaries was then assumed to be 15.2 percent of all beneficiaries of nurseries and kindergartens, based on MOHW childcare statistics for 2012 and the 2013 budget.

Among childcare service subsidies, some are provided as support for labor costs, particularly for educators and caretakers at nurseries specializing in infants between the ages of zero and one. The ratio of beneficiaries of such subsidies is assumed to be 24.9 percent, also based on MOHW childcare statistics for 2012 and the 2013 budget.

Childcare service subsidies are also provided to support labor costs for educators and caretakers specializing in, or caring for, children with disabilities at nurseries and kindergartens. The ratio of beneficiaries of such subsidies was then assumed to be 38 percent of all children with disabilities attending nurseries and kindergartens, based on MOHW childcare statistics for 2012 and the 2013 budget.

Childcare service subsidies are also provided to support the labor costs of educators and caretakers who work extended hours to care for children. The amount of subsidies to be provided in this regard is estimated by multiplying the number of children using extended-hour services by a ratio of 18.9 percent.

(4) Childcare assistance

Under the childcare assistance program the government subsidizes part of the cost of providing home-based childcare for children aged 12 or under whose parents are unable to provide full-time care themselves.[45] The rate of increase in the amount of subsidies per capita is assumed to follow the yearly economic growth rate. On average, the cen-

45) Children of parents who both work, of a single parent, or of a parent with disabilities; or children born into households with more than three children. Three different levels of assistance are provided for households earning the national average income or less.

tral government share ratio is 64.7 percent of the total childcare assistance cost.

The number of beneficiaries for this program is estimated by multiplying the number of children by the rate of usage of hourly care services. The usage rate is assumed to be 0.7 percent for children between the ages of zero and 12, based on the 2013 budget. The ratio of children less than one year old who require day-long childcare services and assistance was estimated as 0.9 percent, based on the 2013 budget.

C. Results of expenditure projections on childcare policy programs

〈Table 5-14〉 Childcare policy program expenditure projections

(Unit: KRW 1 trillion)

Year	Total (ratio to GDP)	Total (A+B+C+D)	Childcare subsidies (A)	Home childcare allowances (B)	Childcare services (C)	Childcare assistance (D)
2013	0.726%	9.6	6.8	1.8	0.9	0.1
2020	0.713%	15.1	10.6	2.9	1.4	0.1
2025	0.704%	19.8	13.9	3.9	1.9	0.2
2030	0.676%	24.1	16.9	4.6	2.3	0.2
2035	0.615%	26.7	18.8	5.0	2.6	0.2
2040	0.542%	28.0	19.7	5.3	2.7	0.3
2045	0.502%	30.4	21.3	5.9	2.9	0.3
2050	0.487%	34.5	24.1	6.7	3.3	0.3
2055	0.477%	39.2	27.4	7.6	3.8	0.3
2060	0.463%	43.5	30.5	8.4	4.2	0.4

3. Elderly care policy programs

A. Projection overview

Elderly care programs included in the 2013 budget are basic elderly care services, general elderly care services, and the u-Care service system, all of which are categorized as ALMPs in the OECD SOCX.

The basic rates involved in expenditure projections here include the amounts of benefits and labor costs per capita and their rates of increase; the number of beneficiaries; the number of eligible participants; the ratio of caretakers to beneficiaries; and the rate of increase in the number of seniors aged 65 or above who live alone. The rate of increase in the amounts of benefits and labor costs per capita follows the yearly economic growth rate as determined by the Subcommittee for Fiscal Projection of Social Security.

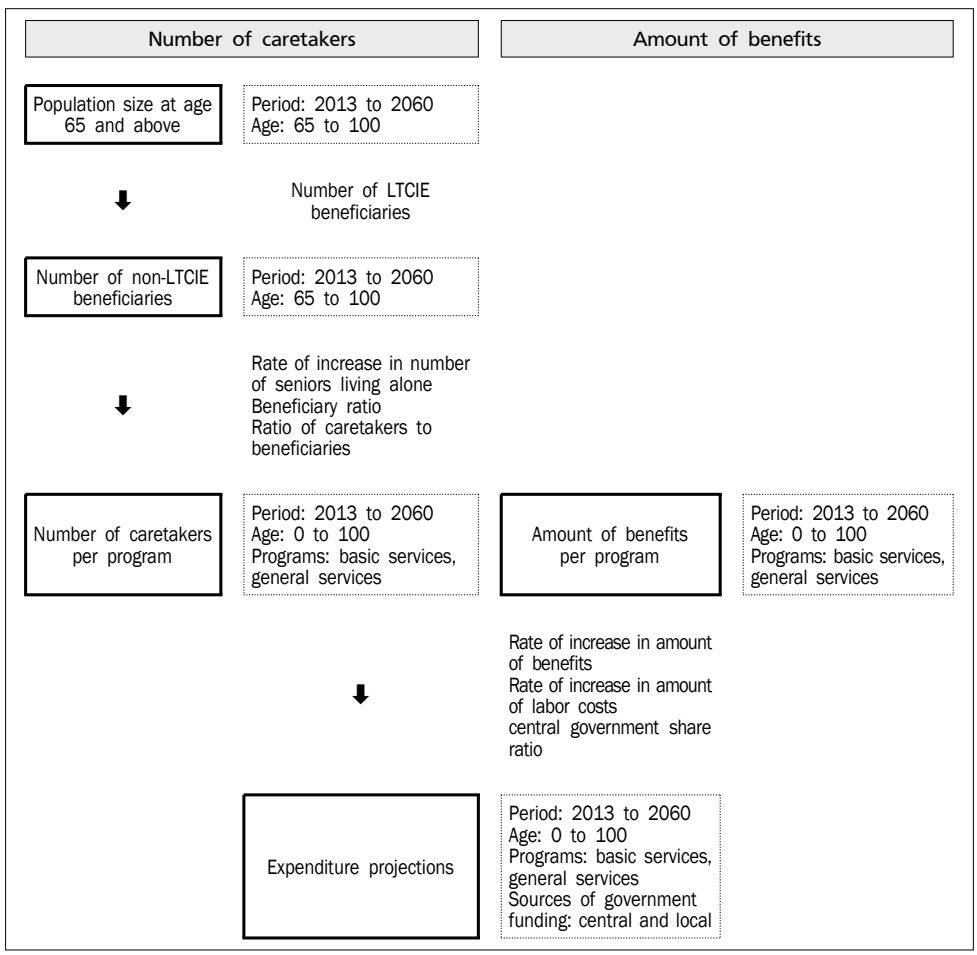
〈Table 5-15〉 Elderly care programs in the 2013 budget reflected in the projection model

Elderly care programs in the 2013 budget	Basic rates (as program variables)	Input variables from other projection models	Included in the budget projection model?	SOCX category
① Basic elderly care services	• Rate of increase in number of seniors (65+) living alone • Ratio of caretakers to beneficiaries • Rate of increase in labor cost per capita	Number of beneficiaries of LTCIE for seniors age 65+	Included (but center administrative costs and retirement benefits not included)	ALMPs
② General elderly care services	• Number of beneficiaries • Rate of increase in amount of benefits per capita		Included	
③ u-Care system (for seniors living alone)	• Rate of increase in maintenance unit costs • Number of beneficiaries		Partially included (local center labor costs not included)	

B. Expenditure projections

The process of producing expenditure projections for elderly care program benefits is illustrated in the figure below. First, the number of caretakers involved in each program is estimated. This involves subtracting the number of LTCIE beneficiaries at age 65 or above from Statistics Korea future population projections, and multiplying that balance by the rate of increase in the number of seniors living alone, the beneficiary ratio, and the ratio of caretakers to beneficiaries. The resulting number of caretakers is then multiplied by the amount of benefits, and also by the rate of increase in the amounts of benefits and labor costs as well as by the central government share ratio.

〔Figure 5-3〕 Elderly care program benefit expenditure projections



(1) Basic elderly care services

The beneficiaries of basic elderly care services are seniors aged 65 or above who live alone and do not receive LTCIE benefits. As for the projected ratio of LTCIE beneficiaries among the elderly population at age 65 or above, please refer to the section on LTCIE expenditure projections.

〈Table 5-16〉 LTCIE beneficiary ratio projections

Year	2011	2020	2030	2040	2050	2060
Ratio of seniors receiving LTCIE benefits to total elderly population at age 65 or above	5.13%	6.30%	5.99%	6.80%	8.09%	8.72%

Source: "Long-term Budget Projections for the NHI and the LTCIE" at the third Social Security Budget Projection Committee meeting held on June 27, 2013.

The proportion of non-LTCIE beneficiaries subscribing to basic elderly care services in 2013 was 3.0 percent. The projections herein assume that this proportion will remain the same in the future.

〈Table 5-17〉 Beneficiary ratio for basic elderly care services (2013 budget)

Ratio	Number of non-LTCIE beneficiaries in 2013 (A)	Number of basic elderly care service beneficiaries in 2013 (B)	Beneficiary ratio (B) / (A)
Number of basic elderly care service beneficiaries out of total number of non-LTCIE beneficiaries at age 65 or above	5,807,000	172,000	3.0%

The number of seniors at age 65 or above living alone increased an average of 0.5 percent per year between 2005 and 2010. The same rate was applied to basic elderly care service expenditure projections. In the meantime, the ratio of caretakers to basic elderly care beneficiaries was 4.0 percent in 2013, which was also applied to the projections.

〈Table 5-18〉 Ratio of caretakers to basic elderly care service beneficiaries (2013 budget)

Number of caretakers for the elderly in 2013 (A)	Number of basic elderly care service beneficiaries in 2013 (B)	(A) : (B)
7,000	172,000	1:24

Sources: Statistics Korea (2011), *Future Population Projections: 2010 to 2060*; MOHW (2013), *Report on the Budget and Fund Appropriation Plan.*

The amount of labor costs per capita was assumed to grow at the yearly economic growth rate, with the average National Treasury burden ratio fixed at 68 percent and based on the 2013 budget.

(2) General elderly care services

The beneficiaries of general elderly care services are seniors aged 65 or above, who are not beneficiaries of the LTCIE and whose households earn 150 percent of the national average income or less each. It was assumed that the beneficiary ratio in the 2013 budget (i.e., the ratio of general elderly care service beneficiaries to the total number of non-LTCIE beneficiaries) would remain the same in the future.

〈Table 5-19〉 General elderly care service beneficiary ratio (2013 budget)

Ratio	Number of non-LTCIE beneficiaries in 2013 (A)	Number of basic elderly care service beneficiaries in 2013 (B)	Beneficiary ratio (B) / (A)
Number of basic elderly care service beneficiaries out of total number of non-LTCIE beneficiaries at age 65 or above	5,807,000	322,000	0.6%

Source: MOHW (2013). *Report on the Budget and Fund Appropriation Plan 2013.*

The amount of benefits per capita was assumed to grow at the yearly economic growth rate. The rate used in 2013, however, was 3 percent. The average central government share for general elderly care services was 70 percent in the 2013 budget.

(3) u-Care system maintenance subsidies for seniors living alone

Beneficiaries of u-Care system maintenance subsidies are seniors who live alone, are beneficiaries of basic elderly care services, and who have applied for the program. The underlying assumption for the projections herein is that 39.9 percent of basic elderly care service beneficiaries, as identified in 2013, will continue to benefit from the u-Care system in the future.

〈Table 5-20〉 Ratio of u-Care system beneficiaries to basic elderly care service beneficiaries (2013 budget)

	Number of basic elderly care service beneficiaries in 2013 (A)	Number of u-Care system beneficiaries in 2013 (B)	u-Care system beneficiary ratio (B) / (A)
Ratio	172,000	69,000	39.9%

Source: MOHW (2013). *Report on the Budget and Fund Appropriation Plan 2013.*

Although the projections herein assume that the amount of u-Care system subsidies will increase at the yearly economic growth rate, the actual 2013 budget retained the preceding year's rate. The average central government share ratio used in the projections is 70 percent, based on the 2013 budget.

C. Results of expenditure projections on elderly care programs

〈Table 5-21〉 Elderly care program expenditure projections

(Unit: KRW 1 trillion, Ratio to GDP %)

Year	2013	2020	2025	2030	2035	2040	2045	2050	2055	2060
Elderly care programs	0.2	0.3	0.5	0.9	1.2	1.6	2.0	2.4	2.7	3.0
Ratio to GDP	0.012	0.015	0.020	0.024	0.028	0.031	0.033	0.033	0.033	0.032

II. Programs for simple projection model

Aside from the structured actuarial projection programs which separate expenditure projection model for each program is developed, this study also utilizes simple projection methods and rates of increase regarding the programs that are not quite sensitive to low fertility and population ageing. Expenditure projections for these programs are based on related institutional characteristics and past records. The item of simple projection method for expenditure examined here include: the Minimum Living Security Program (MLSP); ALMPs; Patriots and Veterans Allowances (PVAs); Earned-Income Tax Credits (EITCs); the Public Rental Housing Program (PRHP); locally-financed welfare programs and services; and other miscellaneous items of fiscal expenditure.

1. Individualized benefit of Minimum Living Security Program (MLSP)

MLSP is highly sensitive to change in population structure. However, the law governing MLSP has changed it from a bundle benefit program into an individual benefit entitlement program. Since there is no historic data on expenditure and prior rates for program variables this study employed a simple extrapolation method using government budget assigned to MLSP for 2014. When the revised MLSP is stabilized in the near future, it will be included in the structured projection model.

Expenditure for the MLSP was projected on the basis of the 2014 government budget draft. The projection took into account the customized benefits that the program would begin to provide in October 2014, and applied the expenditure and central government share ratios effective in the last three months of 2014 to the expenditure projections for the MLSP in 2015. Expenditure projections pertaining to the years after 2015 are based on the economic growth rate, and the assumption that the number of beneficiaries will remain at the current level, regardless of demographic changes in the rest of the Korean population. Mid- to long-term expenditure projections involving the customized benefits system are based on the formula for determining fiscal resources required per amended law.

(1) Cash benefit

The cash benefit stated in the 2014 budget draft is 27 percent of the median household income (MHI).[46] Although the Social Security Committee, in a meeting held on September 10, 2013, discussed gradually raising the living wage level to up to 30 percent of the MHI, no official plan has been confirmed in this regard. Accordingly, the cash benefit projections herein assume a cash benefit level for 2015 as 28 percent of the MHI, and that it will grow at the yearly economic growth rate beginning in 2016.

46) The cash benefit level of the 2013 integrated benefits system was 27 percent of the MHI.

〈Table 5-22〉 Projected increases in cash benefit expenditure

	From October 2014 onward	2015
Cash benefit level	27% of MHI	28% of MHI
Average amount of cash benefit per month	KRW 364,000	KRW 296,000
Rate of increase from preceding year		(8.6%)

Source: KIHASA estimates

In producing mid- to long-term projections on cash benefit, ordinary income data (not including rural households) in the Household Survey[47] from 2006 to 2012 were used, and an average yearly increase rate of 4.74 percent[48] was applied to the MHI. To avoid likely short-term distortions in income data resulting from possible economic crises, the MHI increase rate was applied not to the short term of two to three years, but to the intermediate term of five to six years. Projections on the average amount or level of cash benefit assume that the current number of beneficiary households (760,251),[49] taking into account possible changes in wealth level, will remain even after the 2014 reform.

〈Table 5-23〉 Projections on MHI per capita (2012 to 2014)

	2011	2012	2013	2014
MHI estimate per capita	KRW 1.29 million	KRW 1.36 million	KRW 1.42 million	KRW 1.49 million
Projected MHI increase rate		(4.74%)		

Note: KRW 1.29 million from 2011 was quoted at the public hearing in June 2013.

The average amount of cash benefit per month for the last three months of 2014 is KRW 356,000—the same level as the current system. The average monthly amount in mid- to long-term projections is slightly higher, i.e., KRW 364,000, based on the 2014 living wage system.

47) The Household Survey excludes rural households but provides data for MHI analysis that is sufficient in quantity, timely, and compatible with the projection periods.

48) Proceedings of the public hearing held in June 2013 as recorded in *Measures to Reform the MLSP with a Customized Benefits System.*

49) Proceedings of the public hearing held in June 2013 as recorded in *Measures to Reform the MLSP with a Customized Benefits System.*

〈Table 5-24〉 Cash benefit expenditure projections (2014 to 2017)

	Effective as of October 2014	2015	2016 and onward
Cash benefit projections (central and local governments)	KRW 3.5 trillion	KRW 4.1 trillion	
Rate of increase from preceding year		(16.4%)	Following economic growth rate

(2) Education allowances (applicable beginning in 2015)

The range of eligible beneficiaries of education allowances has been expanded to low-income households earning up to 50 percent of the MHI. The Social Security Committee, at a meeting held on September 10, 2013, also considered relaxing the criteria for recognizing support obligators(family members). Such a move is expected to almost double the number of beneficiaries, from 210,000 or so in the 2014 budget draft.

〈Table 5-25〉 Education allowance expenditure projections (2015 to 2017)

(Unit: KRW 1 billion)

	2014 budget draft	2015 and onward
Education allowance projections (central and local governments)	139	147
Remark		Number of beneficiaries likely to increase to include significant number of new beneficiary by relaxing condition of support obligators of family members

(3) Housing benefits

While figures in the 2014 budget draft were used for housing benefit projections, 30,000 or so additional owner-occupied households[50] were applied to projections beginning in 2014.

50) The number of beneficiaries eligible for housing repair subsidies every three years.

〈Table 5-26〉 Expenditure projections after the housing benefit reform of October 2014

	2014	2015
Housing benefits expenditure (central and local governments)	KRW 0.9 trillion	KRW 1.3 trillion
Rate of increase from preceding year		(34.7%)

(4) Results of MLSP expenditure projections

Amounting to 12 trillion in total, with the amount of housing benefits expected to increase most rapidly, at 34.7 percent. Since revised MLSP applies separate entitlement for individual benefit in MLSP beginning of 2014. This figure is very rough estimate of actual expenditure to be disbursed in 2014 and 2015.

〈Table 5-27〉 MLSP expenditure projections (2014 to 2015)

(Unit: KRW 1 billion)

MLSP expenditure (central and local governments)	2014	2015	Rate of increase
Cash benefit	3,488	4,059	16.4%
Housing benefits	931	1,255	34.7%
Education allowances	139	147	5.8%
Medicaid benefits	5,587	6,061	8.5%
Childbirth and funerary allowances	30	31	3.3%
Grain discounts	102	106	3.9%
Total	10,277	11,659	13.4%

The ratio of MLSP expenditure to GDP will likely increase slightly, from 0.74 percent (KRW 9.8 trillion) in 2013 to 0.77 percent or so later on.

〈Table 5-28〉 MLSP expenditure projections (2013 to 2060)

(Unit: KRW 1 billion)

MLSP	2013	2020	2030	2040	2050	2060
Expenditure	9,782	16,364	27,427	39,796	54,540	72,346
Ratio to GDP	0.74%	0.77%				

2. ALMPs (not including UI programs)

(1) Projection model

In producing projections for expenditure on ALMPs, it was assumed that the total budget stated in the database on government-financed work programs pertained to the central government only (not local governments). Local budgets for ALMPs are partially subsidized by the central government even when operated by local governments. The amount of local budgets was thus based on MOL estimates included in the 2013 budget. Of the 217 programs listed in the database, 39 programs operated based on the UI Fund were excluded from ALMP projections. Three other programs were also excluded because they required a separate projection model befitting general fiscal expenditure. In total, 175 ALMPs were considered.

〈Table 5-29〉 Projected rates of increase in expenditure for different types of ALMPs

(Unit: KRW 1 billion)

Type	Number of programs	2013 budget (central and local)	Rate of increase
Total	175	5,353 (100.0%)	
1. Direct employment	66	3,136 (58.6%)	2013 expenditure level maintained (i.e., "zero" increase), except in three programs with separate projection model[1)]
2. Occupational training	55	223 (4.2%)	5% of total ALMP expenditure
3. Employment services	28	495 (9.2%)	Economic growth rate (Average rate of growth over past four years: 30 percent per year)
4. Employment subsidies	6	718 (13.4%)	Wage growth rate
5. Entrepreneurial support	17	447 (8.4%)	Economic growth rate
6. Income support	3	334 (6.2%)	Number of beneficiaries and amount of benefits estimated based on characteristics of three programs[2)]

Notes: 1) Excluding the programs for supporting the activities of persons with disabilities (KRW 382.9 billion), elderly care services (KRW 118.2 billion), and childcare assistance (KRW 66.6 billion) that utilized separate projection models.

2) KRW 266.8 billion in substitute payments, KRW 62.4 billion in direct payments for management transfer, and KRW 5 billion in overdue wage clearance loans for employers

The ALMPs were then divided into six categories, i.e., direct employment, occupational training, employment services, employment subsidies, entrepreneurial support, and income support.

① Direct employment (government sponsored public service jobs)

Direct employment programs form the greatest share of all ALMPs in Korea. Although their share may shrink in the long run, these programs are unlikely to experience any abrupt changes for the time being. As the range and scope of these programs continue to expand, the government moved to reduce them beginning with the 2014 budget, with the exception of programs concerning senior employment. The 2013 budget of KRW 2.3 trillion has thus been maintained.

② Occupational training

Expenditure for occupational training programs will likely increase gradually over time, without abrupt spikes. The underlying assumption for projections on these programs is therefore that the share of these programs—except those operating based on the UI Fund—will remain at 5 percent of the total ALMP expenditure.

③ Employment services

The share of employment services in overall ALMPs is likely to grow in the long run, as there is a shortage in the number of employment counselors in comparison to the rising demand, and the demand for customized services—such as the Employment Success Package—will continue to increase in the future. For projection purposes, expenditure on these programs was assumed to increase gradually and consistently. The yearly average growth rate of the past three years was applied to projections from 2014 to 2024, and the economic growth rate was applied to the period beginning in 2025.

〈Table 5-30〉 Rates of increase in employment service program expenditure

Year	2010	2011	2012	2013	2014~2024	2025 and onward
Average yearly growth rate	33.6%	52.7%	27.8%	21.5%	Reflecting recent trend of slowing down (2011 and 2012)	Economic growth rate

④ Employment subsidies

Although expenditure for employment subsidy programs has increased dramatically over the past two years, the rise can be attributed to the introduction of a new program, the Duru Nuri Program[51], which was intended to ensure the universality of social insurance benefits. The increase is therefore unlikely to continue as a long-term trend. Although some argue that the government should not continue to subsidize employers' social insurance costs in the long run, the new program is likely to remain in place to support workers earning low wages. Considering that social insurance subsidies make up 75 percent or so of all employment subsidies, projections for these subsidies were based on the assumption that their expenditure will grow at the wage growth rate. Examples of these programs include the Social Insurance Blind Spot Removal Program, the Disabled Employment Subsidy Program, the Disabled Employment and Management Support Program, the Technological Innovation Capacity Enhancement Program for Small and Medium Businesses (involving the employment of retired scientists and engineers), the Industrial Professional Capacity Enhancement Program, and the North Korean Settlers Subsidy Program.

⑤ Entrepreneurial support (Support for starting up business)

The budget for entrepreneurial support programs rose dramatically and suddenly in 2012, and is likely to continue this upward trend for years to come. Projections for these programs thus assume that their spending will grow in pace with the economic growth rate.

51) Duru Nuri Program: government subsidizes payroll tax burden of social insurance for temporary workers in SME.

⑥ Income maintenance support (substitute payment for overdue wages from bankruptcy)

The amount of income support subsidies is likely to increase gradually and slightly over time, and then slowly taper off. The amount of direct payments for farm transfe r[52] will similarly decrease over time, given the reduced rural population. On the whole, these programs will mark the lowest rate of increase among all ALMPs. There are three types of income support provided: substitute payments from the MOL drawing on the Income Bonds Guarantee Fund; direct payments for management transfer from the MAFRA drawing on the Special Agricultural Account; and overdue wage clearance loans for employers.

Expenditure on substitute payments is projected by assuming that the number of workers not receiving pay and the number of substitute payment recipients closely follow economic shifts. The number of substitute payment recipients was estimated to be 0.3 percent of the average number of wage earners from 2008 to 2012 (with the number of wage earners estimated in the UI projection process). The rate of increase in the amount of payments per capita was fixed at 3 percent.

〈Table 5-31〉 Number of substitute payment for overdue wage recipients and the amount of payments per capita

Substitute payments	2008	2009	2010	2011	2012	Average, 2008-2012
No. of beneficiaries	44,000	66,000	59,000	50,000	49,000	0.3 percent of wage earners
Amount per capita (KRW 1 million)	426	466	449	469	478	3.0%

The amount of overdue wage clearance loans for employers is estimated in terms of the amount of unrecovered loans only, by taking into account loan terms and recovery rates. The amount of these loans is assumed to grow at the wage growth rate, with 75 percent of loans recovered.

52) Direct payments for farm transfer: cash support for the elderly farm owners who transfer ownership to young farmers.

The amount of direct payments for management transfer is assumed to grow at the economic growth rate, taking into account the rate of decrease in the rural population (because the rural population is ineligible for this program). The population-related assumption is that the rural population will continue to decrease until 2023, and will remain at the same level afterward.

(2) Expenditure projections by types of ALMPs

Expenditure on ALMPs, except for programs operating based on the UI Fund and direct employment programs, will increase over time. The ratio of ALMP expenditure in the GDP, however, will drop slightly, from 0.4 percent in 2013 to 0.2 percent in 2060, mainly because direct employment programs will likely be terminated in the future due to a decreased workforce associated with the low birth rate.

〈Table 5-32〉 Expenditure projections by types of ALMPs (except for UI Fund programs)

(Unit: KRW 1 billion)

Year	Direct employment	Occupational training	Employment services	Employment subsidies	Entrepreneurial support	Income maintenance support	Total	Ratio to GDP
2013	3,136	223	495	718	447	334	5,353	0.4%
2020	3,136	364	1,446	1,161	714	463	7,285	0.3%
2025	3,136	437	2,092	1,572	946	553	8,738	0.3%
2030	3,136	511	2,650	2,067	1,198	659	10,221	0.3%
2035	3,136	590	3,236	2,608	1,464	762	11,795	0.3%
2040	3,136	674	3,846	3,210	1,739	880	13,484	0.3%
2045	3,136	770	4,521	3,924	2,044	1,009	15,404	0.3%
2050	3,136	880	5,277	4,774	2,387	1,143	17,596	0.3%
2055	3,136	1,005	6,112	5,808	2,764	1,282	20,108	0.3%
2060	3,136	1,148	7,009	7,067	3,170	1,422	22,952	0.2%

Note: Excluding programs for supporting the activities of persons with disabilities (KRW 382.9 billion), elderly care services (KRW 118.2 billion), and childcare assistance (KRW 66.6 billion) that utilized separate projection models.

〈Table 5-33〉 Results of ALMP expenditure projections

(Unit: KRW 1 billion)

Year	UI Fund (A)	General revenue account (B)			ALMP sum (A+B)	Ratio to GDP
		Separate projection models[1)]	Different types of ALMPs[2)]	Subtotal		
2013	2,276	790	5,353	6,143	8,418	0.63%
2020	4,442	1,321	7,285	8,606	13,048	0.62%
2025	5,701	1,819	8,738	10,557	16,258	0.58%
2030	7,369	2,383	10,221	12,604	19,973	0.56%
2035	8,000	2,965	11,795	14,760	22,760	0.52%
2040	8,993	3,540	13,484	17,024	26,017	0.50%
2045	11,384	4,104	15,404	19,508	30,892	0.51%
2050	11,455	4,672	17,596	22,268	33,724	0.48%
2055	12,990	5,212	20,108	25,320	38,309	0.47%
2060	14,367	5,750	22,952	28,702	43,069	0.46%

Notes: 1) Excluding programs for supporting the activities of persons with disabilities (KRW 382.9 billion), elderly care services (KRW 118.2 billion), and childcare assistance (KRW 66.6 billion) that utilized separate projection models.

2) Not including ALMPs operating based on the UI Fund.

3. Compensations and allowances under Ministry of Patriots and Veterans Affairs (MPVA) programs

(1) Projection model

The main social benefit programs offered under the MPVA are compensations and other allowances. Different rates of increase were applied to these two types of programs. The rate of increase from 2009 to 2013, namely 5.99 percent, was applied to compensation programs, assuming that the rate will remain the same in the future.

〈Table 5-34〉 Amount of MPVA compensation growth rate (2011 to 2013)

Program type	2009~2010	2010~2011	2011~2012	2012~2013	Yearly growth rate
Compensation	4.73%	3.66%	10.10%	5.58%	5.99%

The amount of allowances per capita, on the other hand, was assumed to grow by 3.49 percent, which was the rate of increase from 2011 to 2013. We also hypothesized that there will be no rise in new beneficiaries and that the current number of beneficiaries will continue to decrease over time. The lifespan of these beneficiaries, based on the MPVA list of beneficiaries grouped by age and assembled in June 2013, was assumed to be 100 years.

〈Table 5-35〉 Amount of MPVA allowances per capita and the yearly growth rate (2011 to 2013)

	2011	2012	2013
Amount per capita (in KRW 1 million)	2.71	2.59	2.90
Average yearly growth rate	3.49% (from 2011 to 2013)		

〈Table 5-36〉 Rate of suspended payments and projected future numbers of beneficiaries

	2013	2015	2020	2030	2040	2050	2060
Rate of suspended payments (%)	-	0.007	0.013	2.500	2.95	63.47	23.0
No. of beneficiaries	314,733	314,689	314,482	276,069	147,625	12,482	170

〈Table 5-37〉 Number of MPVA beneficiaries by age and type

Age	Descendants of Korean War heroes	Distinguished Service honorees	War veterans	Victims of defoliants			Total
				Severe	Medium	Mild	
35~39	7	-	-	-	-	-	7
40~44	22	-	-	-	-	-	22
45~49	65	-	-	-	-	-	65
50~54	98	-	-	-	-	-	98
55~59	251	-	-	-	-	3	254
60~64	5,469	590	-	1,815	467	3,717	12,058
65~69	3,115	3,534	79,805	7,137	1,881	12,981	108,453
70~74	1,037	1,925	18,355	1,820	534	3,019	26,690
75~79	453	1,591	19,227	425	118	629	22,443
80~84	168	11,314	93,847	253	59	360	106,001
85~89	44	4,069	31,219	12	7	29	35,380
90~94	6	358	2,669	-	-	-	3,033
95~99	1	23	183	-	-	-	207
100 and above	-	1	21	-	-	-	22
Total	10,736	23,405	245,326	11,462	3,066	20,738	314,733

Note: As of the end of June 2013.

(2) Expenditure projection results

While the compensatory benefits provided by the MPVA are expected to increase in amount rather radically in the coming years, at a rate of 5.99 percent, the amounts of other allowances paid by the MPVA will decrease gradually over time, after 2030, as the number of surviving beneficiaries is reduced. Total expenditure for these programs amounted to KRW 3.3 trillion (0.25 percent of GDP) in 2013, and is expected to increase to KRW 35.4 trillion (0.38 percent of GDP), mainly because compensatory benefits make up the majority of these programs.

〈Table 5-38〉 MPVA compensation and allowance projections

(Unit: KRW 1 billion)

Year	Total		Compensations	Allowances
	ratio to GDP	amount		
2013	0.25%	3,263	2,299	964
2015	0.24%	3,615	2,583	1,032
2020	0.22%	4,680	3,455	1,225
2025	0.22%	6,061	4,621	1,440
2030	0.22%	7,696	6,181	1,515
2035	0.22%	9,375	8,267	1,108
2040	0.24%	12,200	11,058	1,142
2045	0.26%	15,902	14,792	1,110
2050	0.28%	19,921	19,785	136
2055	0.32%	26,470	26,465	5
2060	0.38%	35,402	35,399	3

4. Earned-Income Tax Credit (EITC)

(1) Projection model

The amount of benefits provided in the form of EITCs will increase dramatically in 2014 according to the tax reform plan announced by the Korean government on August 8, 2013. Changes in EITCs will include the following. First, beginning in 2014, households will become the basic units of EITCs, and the maximum amount of

EITCs will be raised. Beginning in 2015, business owners will be eligible for EITCs, while the criteria for deciding beneficiaries will be significantly relaxed on the whole, especially with respect to property and home ownership criteria. Additional tax credits will be provided, up to KRW 500,000 in value, depending on the number of children per household. Beginning in 2016, people in their 50s or older and living alone will become eligible; in 2017, people in their 40s or older and living alone will also become eligible.

〈Table 5-39〉 Changes to EITC

Change			2014	2015	2016	2017
EITC	Household as the basic unit Amount of EITCs to increase		○			
	Business owners eligible for EITCs			○		
	Relaxation of property and home ownership criteria			○		
	MLSP beneficiaries eligible for EITCs			○		
	Persons living alone	50s or older			○	
		40s or older				○
CTC introduced				○		

Source: A press release from the MOSF, explaining the changes of the EITC.

According to the MOSF, the new tax reform plan will increase the number of households benefitting from EITCs from 750,000 in 2012 to 2,500,000 by 2017, and the total amount provided in EITCs from KRW 600 billion to KRW 2.5 trillion over the same period.

Budget projections for 2013 therefore cite the KRW 2.5 trillion for 2017 stated by the MOSF in a recent press release, and assume that the total amount provided in EITCs will increase by KRW 360 billion per year between 2013 and 2017, from KRW 682 billion to KRW 2.5 trillion. The amount is then assumed to increase in pace with the economic growth rate beginning in 2018.

〈Table 5-40〉 EITC budget projections (2013 to 2017)

(Unit: KRW 1 billion)

	2013 budget	2014	2015	2016	2017 (plan)	2018 and onward
EITC	682	1137	1592	2047	2,500	Increasing at the economic growth rate (assumed by authors)

(2) Expenditure projection results

According to the tax reform plan, the amount of EITCs will increase exponentially from KRW 0.7 trillion (0.05 percent of GDP) in 2013 to KRW 3.1 trillion (0.14 percent of GDP) by 2020. The EITCs will then maintain a consistent ratio to the GDP (0.14 percent) after 2020, and grow to KRW 13.6 trillion in total amount by 2060.

〈Table 5-41〉 EITC expenditure projections (assuming increase at the economic growth rate beginning in 2018)

Year	EITC	
	Amount (KRW 1 billion)	Ratio to GDP
2013	682	0.05%
2015	1,592	0.11%
2020	3,055	0.14%
2025	4,046	
2030	5,123	
2035	6,258	
2040	7,436	
2045	8,740	
2050	10,204	
2055	11,818	
2060	13,552	

5. Public rental housing programs

A. Scope of housing expenditure according to the SOCX

The OECD SOCX determines housing expenditure[53] by determining the sum of social benefits paid to individuals to assist with housing and rental costs, based on the 2013 budgets of member states. In other words, housing expenditure consists of subsidies provided directly from public sources to individuals to help with housing and rental costs. Beginning in 2010, Korea began to include subsidies provided for the construction of public rental housing buildings (KRW 3.8 trillion). Such subsidies help support the costs of building and acquiring housing buildings that can be let on a permanent, national, or public basis to vulnerable groups, such as senior citizens, persons with disabilities, and low-income households. Because these construction subsidies are not directly paid to individuals who pay rent, they are rather included in the budgets of other programs, such as those for the elderly, and as a part of incapacity-related benefits.

Once the housing benefit system is transformed from the existing integrated format to the customized benefit system, as planned for the 2014 budget, the housing benefits that currently form part of the MLSP will be re-categorized as part of housing policy programs and benefits. In existing SOCX data the costs of public rental housing are also included in the category of housing policy benefits, but an additional category may be required to account for these costs with greater precision. For example, new categories may be needed for National Housing Fund (NHF) loans for low-income households to acquire homes, and other "hidden" costs of the housing policy programs.[54]

The revised SOCX Manual (2011) advises that secondary compensations be included in projections beginning in 2012. Because a new international consensus is

53) Adema, W., P. Fron and M. Ladaique (2011). *Is the European Welfare State Really More Expensive?: Indicators on Social Spending, 1980-2012; and a Manual to the OECD Social Expenditure Database (SOCX)*. OECD Social, Employment and Migration Working Papers, No. 124, OECD Publishing.

54) An example of a hidden cost is the public burden that accrues when a subsidized individual pays only part of the '*jeonse*' or monthly rent.

needed in terms of the categorization and method of projecting hidden costs, these costs are currently left out of SOCX data. New categories of housing policy benefits, and the specific methods for projecting secondary compensations, depreciation costs, and the like, will be discussed at the OECD experts meeting, to be held in February 2014.

B. Scope of public rental housing benefits in the 2013 budget

The OECD meeting with OECD SOCX officer Willem Adema held on October 31, 2013, confirmed the scope of public rental housing benefits in SOCX as including the construction and acquiring of public rental housing buildings and the costs of renovating and repairing obsolete public rental housing buildings. According to this definition, the amount categorized as housing policy benefits in the 2013 Korean budget comes to KRW 1.5 trillion. This figure includes the KRW 1.3 trillion spent on the NHF, such as subsidies for the housing market stabilization and housing welfare improvement programs (the latter involving the provision of additional rental housing and the improvement of living conditions), as well as the KRW 0.2 trillion set aside in the general and special accounting of 2013 for improving obsolete public rental housing buildings.

〈Table 5-42〉 Public rental housing expenditure (2013 budget)

Type	Program	2013 budget (in KRW 1 billion)
Total		1,501
NHF (Housing market stabilization and housing welfare improvement programs)	Subtotal	1,306
	Public rental housing	1,299
	• Loans for owners of units in multi-household housing buildings	200
	• Current subsidies for jeonse-type rental	38
	• National rental loans	621
	• Permanent rental loans	440
	Improvement of living conditions	7
	• Improvement of living conditions	5
	• Funding for improvement of living conditions of vulnerable groups	3
2013 general and special accounts	Improvement of obsolete public rental housing buildings	195
	• Renewal subsidies	110
	• Improvement of obsolete public rental housing buildings	85

C. Bases for projections of public rental housing construction costs and others

If one were to include the costs of public rental housing construction in the category of housing policy benefits and expenditure, one may soon run into difficulties in projecting those costs in light of possible decreases in demand for such housing in the future. Statistics Korea provides projections on the number of households until 2035 or so. Assuming that a household will consist of 2.33 people then as it does now, the number of households will begin to decrease in 2036. The drop in the projected number of households after 2035 may require a projection for reconstruction costs. As for expenditure projections on improving obsolete public rental housing, other common indicators of increase (e.g., economic growth and inflation rates) were applied.

D. Cost and budget projections for public rental housing

(1) Public rental housing budget plan

The current public rental housing plan lists only those projects that have been authorized and are planned until 2017. The Korean government plans to provide 4,000 units of permanent rental housing in 2013, and 7,000 new units each year beginning in 2014, thus providing 32,000 units in total between 2013 and 2017. Similarly, 32,000 units of national rental housing will be provided in 2013, and 35,000 more additionally each year afterward, up to 172,000 units in total.

The plan for 5/10 years term public rental housing envision providing 10,000 new units annually up to 50,000 units in total. There are also plans to provide 11,000 new units of multi-household housing each year, and subsidies for the jeonse-type (lump-sum security deposit without monthly rent) rental of 25,000 units of public housing each year, up to 125,000 units in total.

〈Table 5-43〉 Plans for the provision of different types of public rental housing (authorized)

(Unit: 10,000 units)

		Total	2013	2014	2015	2016	2017
Total		44.2	8.2	8.2	8.2	8.2	7.2
Rental construction	Subtotal	31.2	5.6	6.4	6.4	6.4	6.4
	Permanent	3.2	0.4	0.7	0.7	0.7	0.7
	National	17.2	3.2	3.5	3.5	3.5	3.5
Multi-household housing rental		5.5	1.1	1.1	1.1	1.1	1.1
Jeonse-type rental		12.5	2.5	2.5	2.5	2.5	2.5

Notes: Excluding the portion of the 'Bogeumjari' housing budget that has been spent on public distribution but including only the number of publicly provided units of public rental housing.
Source: Internal data of MOLIT.

(2) Limits on mid- to long-term policy and budget projections for public rental housing

Although the Korean government announced its "Bogeumjari" and "Happy House" programs with respect to public rental housing, these programs do not extend into 2060, the end of the projection period. The Happy House Program involves providing 10,000 new units of public rental housing in seven urban centers in the Seoul-Gyeonggi region (i.e., Oryu, Gajwa, Gongneung, Gojan, Mokdong, Jamsil, and Songpa), catering to university students, senior citizens, and persons with disabilities. The Happy House Program is already included in the list of public housing projects authorized until 2017.

The average ratio of public housing to all forms of housing for OECD countries is 11.5 percent (and 13 percent in the EU). Projections in Korea thus estimate that the proportion of public housing in the mid- to long-term provision plan (2009 to 2018) will be kept at 12 percent or so (2012 Bogeumjari Housing Practical Guide, p. 116). The Korean government plans to provide 90,000 new units in public rental housing each year, which is approximately 35 percent of all new housing units likely to be built in Korea. However, Statistics Korea household projections predict that the number of households will begin to decrease drastically after 2035. Whereas 330,000 new households came into being in 2011, the figure will drop to 90,000 by 2035.

Assuming that approximately 35 percent of new housing units in Korea will be public rental housing, the demand for public rental housing will drop to 30,000 units or below by 2035.

It is difficult to predict how public rental housing plans and policies will change in the future, as the provision of public housing units closely reflects changes in society at large, and requires prompt and precise calculations in the processes of drafting and executing budgets. Long-term public rental housing projections are thus rife with possibilities for inaccuracies, and as such require multiple and complex hypotheses. In order to produce fiscal projections pertaining to the years up to and including 2060, we need reliable projections on the number of households. This is particularly difficult to obtain, however, due to the rise in the number of people who opt to live alone, segmented households, and the progressive aging of the population. Childbirth-encouraging policies can also influence the number of households to an unpredictable extent.

Excessive hypotheses and assumptions went into estimating the cost of providing public rental housing until 2035. Risks and inaccuracies are bound to multiply in projections extending to 2060. Public rental housing units are steadily built and provided at present, but may give way to urban renewal or non-subsidization policies in the future.

(3) Public rental housing projection results

It is projected that expenditure on public rental housing will increase from KRW 1.5 trillion (0.11 percent of GDP) in 2013 to KRW 4.5 trillion (0.05 percent of GDP) by 2060. Notwithstanding the Construction Cost Index and the Public Housing Construction Cost Index currently in place, the costs of construction were estimated by applying the inflation rate, given that the inflation rate is already commonly applied to the projections of other categories of social expenditure and that the other two indices tend to overestimate construction costs.

〈Table 5-44〉 Public rental housing expenditure projections

Year	Public rental housing		
	Amount (in KRW 1 billion)	Ratio to GDP (%)	Projected number of households (Statistics Korea)
2013	1,501	0.11	18.21 million
2015	1,580	0.10	18.71 million
2020	1,871	0.09	19.88 million
2025	2,169	0.08	20.94 million
2030	2,468	0.07	21.72 million
2035	2,763	0.06	22.26 million
2040	3,056	0.06	
2045	3,374	0.06	
2050	3,725	0.05	
2055	4,113	0.05	
2060	4,541	0.05	

6. Social expenditure projections for programs financed solely by local government

Expenditure for locally-financed welfare and health programs amounted to KRW 3.1519 trillion (0.24 percent of the GDP) in the 2013 budget. It is predicted that it will grow in pace with the economic growth rate beginning in 2014.

〈Table 5-45〉 Budgets for locally-financed welfare and health programs (2013)

Welfare program	Amount (KRW 100 million)	Health program	Amount (KRW 100 million)
Subtotal	23,909	Subtotal	7,610
MLSP	1,576	Healthcare	7,340
Support for vulnerable groups	6,918	Food and drug safety	269
Childcare, family, and women	5,536		
Elderly and youth	1,719		
Labor	1,896		
Patriots and veterans	1,614		
Housing	3,639		
General social welfare	1,012		

Note: Excluding KRW 829.3 billion set aside for the LTCIE.
Source: MPAS (2013). *Overview of the Integrated Local Government Fiscal Policies 2013*: Part I, p. 42.

The ratio of expenditure for locally-financed welfare programs will remain the same (0.24 percent of GDP) because it is assumed that it will grow at the economic growth rate. The amount of expenditure, however, will multiply from KRW 3.2 trillion in 2013 to KRW 22.3 trillion by 2060.

〈Table 5-46〉 Locally-financed welfare expenditure projections

Year	2013	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Amount (in KRW 1 billion)	3,152	3,578	5,036	6,670	8,447	10,317	12,259	14,410	16,822	19,483	22,343
Ratio to GDP	0.24%										

7. Other types of social expenditure

Structured actuarial projection models and simple projection models cover major social programs. Still there are numerous discretionary social programs aside from the MLSP, MPVA compensations and allowances, EITCs, public rental housing benefits, and locally-financed welfare programs. Therefore we classify these programs as "other social expenditure" and assumed to grow at the economic growth rate.

These miscellaneous items made up KRW 7 trillion of the 2013 budget (2.3 percent of GDP). While the ratio to GDP will remain more or less the same, the amount of expenditure on these items is estimated to increase up to KRW 45 trillion in 2060.

〈Table 5-47〉 Expenditure projections on miscellaneous items

(Unit: KRW 1 trillion)

Year	2013	2020	2025	2030	2035	2040	2045	2050	2055	2060	Yearly growth rate
Amount	7	11	14	18	22	27	30	33	39	45	4.2%
Ratio to GDP	2.3%	2.3%	2.3%	2.2%	2.2%	2.2%	2.2%	2.2%	2.3%	2.3%	

6

Chapter

Social Expenditure Projection Results and International Comparison

6 Social Expenditure Projection Results and International Comparison

Ⅰ. Social expenditure projection results

1. Public social expenditure classification according to OECD SOCX

Projections of social expenditure in Korea reveal that the ratio of total social expenditure to GDP, which stood at 9.8 percent in 2013, will rapidly increase to 12.9 percent by 2020 and to 17.9 percent by 2030. Social insurances, such as NHI, the National Pension, and basic old age pension benefits[55] make up the majority of social expenditure, and their collective share will increase to 80.2 percent of total social expenditure by 2060. On the other hand, the proportion of social expenditure besides social insurance programs will be 19.8 percent, with much of it going to non-contributory basic old age pension benefits.

The eight major social insurances include the National Pension; NHI; LTCIE; WCI; UI; and special occupational pension programs (i.e., the GEPS, the Military Pension, and the PSTP). LTEFC data were used for expenditure projections on these eight insurance programs. Total expenditure for these programs occupied 6.3 percent of GDP in 2013, and is expected to rise to 23.2 percent of GDP by 2060. Should the current insurance rate be maintained, expenditure on these social insurances will increase exponentially due to rising demand and the aging population. These insurances comprised 64.6 percent of total public social expenditure in 2013, but their share is likely to expand to 80.2 percent (or 89.9 percent, if the non-contributory basic old age pension is included) by 2060.

55) The current National Pension benefit formula A-value (5 percent), based on the 70 percent of seniors aged 65 or above in low-income groups, will be raised at a fixed rate beginning in 2014, and reach 10 percent by 2028.

Tax-financed social expenditure on items other than social insurance stood at 3.5 percent of GDP in 2013, and is expected to increase to 5.7 percent by 2060, with its share of 19.8 percent in total social expenditure. Much of tax-financed social expenditure is going to the non-contributory basic old age pension, which occupied 0.3 percent of GDP in 2013, but is predicted to increase to 1.5 percent of the GDP by 2030, and to 2.8 percent of the GDP by 2060.

For major tax-financed social programs, structured projection models were developed as part of this study to produce projections on childcare subsidies, home childcare allowances, childcare services, childcare assistance, disability pensions, activity support for persons with disabilities, disability benefits, and elderly care services. These models project that expenditure on these programs mostly concerning childcare will drop from 0.8 percent of GDP to 0.6 percent, due to the declining birth rate in Korea.

Items of tax-financed social programs that did not require structured projection models, but to apply simple projection models such as MLSP, ALMPs (except programs operating based on the UI Fund), patriot and veteran allowances, and public rental housing benefits were all mostly estimated to grow in pace with the economic growth rate and maintain their current share (2.2 to 2.3 percent) of GDP in the future. The application rate for patriot and veteran allowances and public rental housing benefits, however, was determined based on the inflation rate and actual records so far.

〈Table 6-1〉 Social expenditure projections

(Unit: ratio to GDP, %)

Year	Amount (in KRW 1 trillion)						Ratio to GDP					
	Total (A+B)	Social insurances[1] (A)	Tax-financed programs				Total (A+B)	Social insurances[1] (A)	Tax-financed programs			
			Sub total (B)	Basic old age pension[1]	Structured projection models[2]	Rest[3]			Sub total (B)	Basic old age pension[1]	Structured projection models[2]	Rest[3]
2013	130	84	46	4	11	31	9.8%	6.3%	3.5%	0.3%	0.8%	2.3%
2020	273	192	81	14	18	49	12.9%	9.1%	3.8%	0.6%	0.9%	2.3%
2025	425	308	117	30	24	63	15.1%	11.0%	4.2%	1.1%	0.9%	2.3%
2030	636	473	162	54	30	79	17.9%	13.3%	4.6%	1.5%	0.8%	2.2%
2035	872	662	209	80	34	95	20.1%	15.3%	4.8%	1.8%	0.8%	2.2%
2040	1,165	904	262	112	37	113	22.6%	17.5%	5.1%	2.2%	0.7%	2.2%
2045	1,534	1,214	319	145	41	134	25.3%	20.0%	5.3%	2.4%	0.7%	2.2%
2050	1,885	1,499	385	182	46	157	26.6%	21.2%	5.4%	2.6%	0.7%	2.2%
2055	2,276	1,821	455	218	52	184	27.7%	22.2%	5.5%	2.7%	0.6%	2.2%
2060	2,723	2,185	538	264	58	216	29.0%	23.2%	5.7%	2.8%	0.6%	2.3%
Yearly growth rate	6.7%	7.2%	5.4%	9.1%	3.6%	4.2%						

Notes: 1) Projections for social insurance and non-contributory basic old age pension expenditure are derived from LTEFC data.

2) "Structured models"indicate programs for which either component-based or cohort models were developed, i.e., childcare subsidies, home childcare allowances, childcare services, childcare assistance, the disability pension, activity support for persons with disabilities, disability benefits, and elderly care services.

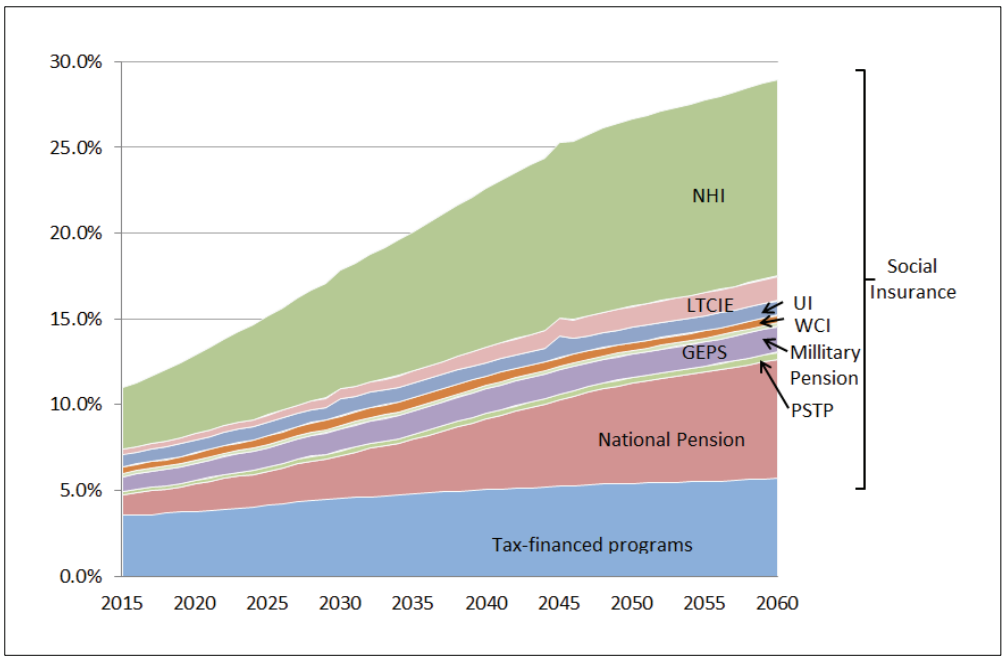
3) "Rest" includes the MLSP, ALMPs (except those operated based on the UI Fund), allowances for patriots and veterans, public rental housing benefits, miscellaneous items, and locally-financed welfare programs.

〈Table 6-2〉 Composition of social expenditure projections

(Unit: %)

Year	Total (A+B)	Social insurances (A)	Tax-financed expenditure			
			Sub total (B)	Non-contributory basic old age pension	Structured projection models	Rest
2013	100.0	64.6	35.4	3.3	8.5	23.6
2020	100.0	70.4	29.6	5.0	6.6	18.0
2025	100.0	72.5	27.5	7.0	5.7	14.9
2030	100.0	74.5	25.5	8.4	4.7	12.4
2035	100.0	76.0	24.0	9.3	3.7	10.6
2040	100.0	77.6	22.4	9.6	3.1	9.7
2045	100.0	79.2	20.8	9.4	2.7	8.7
2050	100.0	79.6	20.4	9.7	2.5	8.3
2055	100.0	80.0	20.0	9.6	2.3	8.1
2060	100.0	80.2	19.8	9.7	2.1	7.9

〔Figure 6-1〕 Ratio of projected social expenditure to GDP



〈Table 6-3〉 Social insurance and non-contributory basic old age pension projections

(Unit: KRW 1 trillion)

Year	Total (A+B)	Social insurances									Basic old age pensions[1] (B)
		Sub total (A)	NHI	LTCIE	National Pension	GEPS	Military Pension	PSTP	WCI	UI	
2013	88	84	42	4	13	11	3	2	4	6	4
2020	206	192	97	7	33	21	4	4	8	16	14
2025	338	308	161	12	56	31	5	7	13	22	30
2030	527	473	247	20	89	45	7	10	20	36	54
2035	742	662	353	30	138	59	8	13	25	36	80
2040	1,015	904	478	45	213	74	10	16	28	40	112
2045	1,359	1,214	622	64	305	86	13	20	30	75	145
2050	1,681	1,499	772	86	412	96	15	24	31	62	182
2055	2,039	1,821	920	110	523	114	19	30	34	71	218
2060	2,448	2,184	1,078	135	655	140	23	37	38	78	264

Notes: 1) non-contributory tax-financed benefit

〈Table 6-4〉 Ratio of projected social insurance and non-contributory basic old age pension to GDP

(Unit: %)

Year	Total (A+B)	Social insurances									Basic old age pensions[1] (B)
		Sub total (A)	NHI	LTCIE	National Pension	GEPS	Military Pension	PSTP	WCI	UI	
2013	6.6	6.3	3.1	0.3	1.0	0.8	0.2	0.2	0.3	0.5	0.3
2020	9.7	9.1	4.6	0.3	1.6	1.0	0.2	0.2	0.4	0.8	0.6
2025	12.0	11.0	5.7	0.4	2.0	1.1	0.2	0.2	0.5	0.8	1.1
2030	14.8	13.3	6.9	0.5	2.5	1.3	0.2	0.3	0.6	1.0	1.5
2035	17.1	15.3	8.1	0.7	3.2	1.3	0.2	0.3	0.6	0.8	1.8
2040	19.7	17.5	9.3	0.9	4.1	1.4	0.2	0.3	0.5	0.8	2.2
2045	22.4	20.0	10.2	1.1	5.0	1.4	0.2	0.3	0.5	1.2	2.4
2050	23.7	21.2	10.9	1.2	5.8	1.4	0.2	0.3	0.4	0.9	2.6
2055	24.8	22.2	11.2	1.3	6.4	1.4	0.2	0.4	0.4	0.9	2.7
2060	26.0	23.2	11.5	1.4	7.0	1.5	0.2	0.4	0.4	0.8	2.8

Notes: 1) non-contributory tax-financed benefit

Total expenditure on items of social spending other than social insurance and non-contributory basic old age pension benefits and that are based on simple projection models—mostly items concerning childcare—is projected to drop to 0.6 percent of GDP by 2060 due to the declining birth rate in Korea. In particular, the proportion of spending on childcare programs with benefits that require structured models will decrease from 87.4 percent in 2013 to 74.7 percent by 2060.

〈Table 6-5〉 Social expenditure projections on items of structured projection models[1)]

(Unit: KRW 1 trillion)

Year	Total	Ratio to GDP	Elderly care services	Disability programs			Childcare programs			
				Disability pension	Disability benefits	Activity support	Childcare subsidies (Nuri Curriculum)	Home childcare allowances	Childcare services	Childcare assistance
2013	11	0.8%	0.2	0.5	0.2	0.5	6.8	1.8	0.9	0.1
2020	18	0.9%	0.3	1.5	0.3	0.9	10.6	2.9	1.4	0.1
2025	24	0.9%	0.5	2.3	0.4	1.1	13.9	3.9	1.9	0.2
2030	30	0.8%	0.9	3.1	0.6	1.3	16.9	4.6	2.3	0.2
2035	34	0.8%	1.2	3.9	0.7	1.5	18.8	5.0	2.6	0.2
2040	37	0.7%	1.6	4.6	0.9	1.7	19.7	5.3	2.7	0.3
2045	41	0.7%	2.0	5.4	1.0	1.9	21.3	5.9	2.9	0.3
2050	46	0.7%	2.4	6.2	1.2	2.0	24.1	6.7	3.3	0.3
2055	52	0.6%	2.7	7.0	1.4	2.2	27.4	7.6	3.8	0.3
2060	58	0.6%	3.0	7.8	1.5	2.3	30.5	8.4	4.2	0.4
Yearly growth rate	3.6%		6.5%	5.9%	4.9%	3.1%	3.3%	3.3%	3.3%	3.3%

Notes: 1) "Structured models"indicate programs for which either component-based or cohort models were developed, i.e., childcare subsidies, home childcare allowances, childcare services, childcare assistance, the disability pension, activity support for persons with disabilities, disability benefits, and elderly care services.

〈Table 6-6〉 Composition of social expenditure projections for items of structured projection models

(Unit: %)

Year	Total	Elderly care services	Disability programs			Childcare programs			
			Disability pension	Disability benefits	Activity support	Childcare subsidies (Nuri Curriculum)	Home childcare allowances	Childcare services	Childcare assistance
2013	100.0	1.4	4.7	1.5	5.0	61.5	16.7	8.4	0.8
2020	100.0	1.8	8.2	1.5	4.8	58.6	16.3	8.0	0.7
2025	100.0	2.3	9.4	1.7	4.5	57.5	16.0	7.9	0.7
2030	100.0	2.9	10.5	1.8	4.4	56.5	15.4	7.8	0.7
2035	100.0	3.6	11.4	2.1	4.5	55.4	14.8	7.6	0.7
2040	100.0	4.4	12.5	2.4	4.6	53.6	14.5	7.4	0.7
2045	100.0	4.9	13.2	2.6	4.5	52.5	14.5	7.2	0.7
2050	100.0	5.1	13.3	2.6	4.3	52.2	14.5	7.2	0.7
2055	100.0	5.1	13.4	2.6	4.2	52.4	14.5	7.2	0.7
2060	100.0	5.2	13.4	2.6	4.0	52.4	14.4	7.2	0.7
Yearly growth rate	3.6	6.5	5.9	4.9	3.1	3.3	3.3	3.3	3.3

The tax-financed social expenditure items (besides social insurances) that are based on simple projection models, such as the MLSP, ALMPs (except programs operating based on the UI Fund), patriot and veteran allowances, and public rental housing benefits were all mostly predicted to grow at the economic growth rate, and maintain their current share (2.2 to 2.3 percent) of GDP in the future. The application rate in the case of patriot and veteran allowances and public rental housing benefits, however, was determined based on the inflation rate and actual records so far.

〈Table 6-7〉 Tax-financed social expenditure projections (besides social insurances and basic old age pension)

(Unit: KRW 1 trillion)

Year	Total		MLSP[1)]	ALMPs[2)]	Public rental housing	MPVA allowances	EITCs	Other	Locally -financed welfare programs
	Amount	Ratio to GDP							
2013	31	2.3%	10	5	2	3	1	7	3
2020	49	2.3%	16	7	2	5	3	11	5
2025	63	2.3%	22	9	2	6	4	14	7
2030	79	2.2%	27	10	2	8	5	18	8
2035	96	2.2%	33	12	3	9	6	22	10
2040	113	2.2%	40	13	3	12	7	27	12
2045	134	2.2%	47	15	3	16	9	30	14
2050	157	2.2%	55	18	4	20	10	33	17
2055	184	2.3%	63	20	4	27	12	39	19
2060	216	2.3%	72	23	5	35	14	45	22
Yearly growth rate	4.2%		4.3%	3.1%	2.4%	5.2%	6.6%	4.2%	4.3%

Notes: 1) The MLSP consists of living wages, housing benefits, medical benefits, education allowances, birth and funerary expenses, and government discounts on grains.

2) The ALMPs here do not include programs operating based on the UI Fund (amounting to KRW 2.3 trillion in 2013).

2. Social expenditure projection and its finance

Social insurance expenditure, which comprised 64.6 percent of Korea's entire social budget in 2013, is expected to increase to 80.2 percent by 2060. Government's contribution for NHI, LTCIE, the GEPS, and the Military Pension are also counted as part of social insurance expenditure. The proportion of tax-financed social expenditure on items other than social insurance programs will accordingly drop from 35.4 percent in 2013 to 19.8 percent in 2060. Central government expenditure, on the other hand, is projected to rise from 67.6 percent in 2013 to 72.6 percent by 2060.

〈Table 6-8〉 Social insurance and central /local government expenditure projections

Year	Amount (in KRW 1 trillion)					
	Total (A+B+C)	Central government share (A)	Local government share			Social insurance expenditure (C)
			Subtotal (B)	Programs subsidized by central government	Locally-financed programs	
2013	130	31	15	12	3	84
2020	273	56	25	20	5	192
2025	425	81	36	29	7	308
2030	636	113	49	41	8	473
2035	872	147	62	52	10	662
2040	1,165	186	75	63	12	904
2045	1,534	229	91	76	14	1,214
2050	1,885	277	108	92	17	1,499
2055	2,276	328	127	107	19	1,821
2060	2,723	390	148	125	22	2,185
Yearly growth rate	6.7%	5.5%	5.0%	5.2%	4.3%	7.2%

Note: (A) and (B) are all tax-financed expenditure; (C) is financed by insurance contributions

〈Table 6-9〉 Composition of social insurance and central /local government expenditure projections

Year	Amount (in KRW 1 trillion)					
	Total (A+B+C)	Central government share (A)	Local government share			Social insurance expenditure (C)
			Subtotal (B)	Programs subsidized by central government	Locally-financed programs	
2013	100.0%	24.0%	11.5%	9.0%	2.4%	64.6%
2020	100.0%	20.4%	9.2%	7.4%	1.8%	70.4%
2025	100.0%	19.0%	8.5%	6.9%	1.6%	72.5%
2030	100.0%	17.8%	7.7%	6.4%	1.3%	74.5%
2035	100.0%	16.9%	7.1%	5.9%	1.2%	76.0%
2040	100.0%	16.0%	6.5%	5.4%	1.1%	77.6%
2045	100.0%	14.9%	5.9%	5.0%	0.9%	79.2%
2050	100.0%	14.7%	5.7%	4.9%	0.9%	79.6%
2055	100.0%	14.4%	5.6%	4.7%	0.9%	80.0%
2060	100.0%	14.3%	5.4%	4.6%	0.8%	80.2%

This study initially set out to make projections on social expenditure in consideration of the acceptable increase in public burden and the fiscal sustainability of increasing mid- to long-term social spending in light of the aging population and the rising demand for welfare benefits. In order to determine the increased level of public burden, the estimated amount of revenue in proportion to GDP (i.e., the tax burden ratio) and the rate of social security compensation were considered. Tax burden ratio analysis, however, has inherent limitations since studies in major advanced economies[56] and in Korea[57] maintain and apply the latest year's tax burden ratio to their future projections. The tax burden ratio, furthermore, can change according to shifts in the national budget balance and fiscal policies. Given the absence of official

56) EU mid-term fiscal projections, fiscal projections by the Congressional Budget Office of the United States and the HM Treasury of the United Kingdom, etc.

57) Park Hyeong-su (2009). *A Study on the Development of a Mid- to Long-term Fiscal Projection Model for Analysis of the Social Welfare Budget*, MOHW and Korea Institute of Public Finance.

long-term fiscal plan in Korea, it is difficult to calculate future tax burden ratios. Considering that tax revenue and general fiscal expenditure increase in proportion to GDP, one may assume that additional resources in excess of the increase in GDP will be necessary to fund social security expenditure in the future.

〈Table 6-10〉 **Projections of additional total tax burdens required to finance social security expenditure increases: assuming tax burden and national debt ratios fixed as current levels**

Year	Total revenue (in KRW 1 trillion)[1) 2)]				Total expenditure (in KRW 1 trillion)			Expenditure in excess of GDP (B–A)
	Total (A)	Tax revenue (national and local)	Social security contributions (payroll)[3)]	Other profits	Total (B)	Public social expenditure	Other government fiscal expenditure[4)]	
2013	441	268	95	78	418	130	288	
2020	717	428	165	124	732	273	459	0.7%
2030	1,220	719	293	208	1,408	636	772	5.3%
2040	1,772	1,042	428	302	2,284	1,165	1,119	9.9%
2050	2,458	1,430	614	414	3,420	1,885	1,535	13.6%
2060	3,250	1,899	801	550	4,762	2,723	2,039	16.1%

Notes: 1) Total tax revenue (i.e., the sum of national and local taxes, contributions to the eight social insurances, and other profits) and expenditure in excess of GDP were estimated by assuming that the tax burden ratio (20.2 percent of GDP in 2012; 26.8%, total tax burden ratio with social insurance payroll tax burden) and the national debt ratio (36.2 percent of GDP) would remain the same.

2) In estimating revenue, GDP elasticity was assumed to be one.

3) Social security contribution revenue was estimated by assuming that the current insurance rates would be maintained.

4) Other fiscal expenditure was estimated by assuming that the ratio of non-welfare expenditure to GDP (21.7 percent in 2011) would remain the same.

3. Social expenditure projections by OECD SOCX category

OECD SOCX categorizes social expenditure by social purpose of each benefit.

〈Table 6-11〉 Descriptions of OECD SOCX categories

policy categories	Description
1. Old age	• Old age pension and other benefits for retirees (including early retirees) • Cash and in-kind benefits, such as care and rehabilitation services, employment assistance, etc. (e.g. National Pension (old age pension and lump-sum refunds), special occupational pensions (GEPS, PSTP, Special Post Office Pension, and related retirement benefits and allowances), Military Pension (retirement pension, retirement lump-sum payments, retirement allowances, basic old age pension), elderly care services, support for elderly organizations, funerary expenses and facilities, elderly shelters, medical care for vulnerable groups, etc.)
2. Survivor	• Survivor pension and other benefits paid to spouses and other dependent or surviving family members (e.g. National Pension (survivor pension and lump-sum payments at death), Special Post Office Pension (survivor pension, survivor lump-sum pension payments, lump-sum payments for survivors, death condolence money), Military Pension (survivor pension, lump-sum payments for survivors, survivor and other benefits, death condolence money, MPVA compensations (nonscheduled) and allowances, etc.)).
3. Incapacity -related benefits	• Benefits paid to persons partially or completely incapacitated who are unable to participate in the workforce (e.g. National Pension (disability pension and lump-sumpayments for persons with disabilities), GEPS and PSTP (workers compensation benefits), Military Pension (pension for wounded soldiers), WCI (business closure, incapacity, nursing, and occupational rehabilitation benefits, as well as survivor benefits, funerary expenses, injuries and illnesses pension, black-lung pension, etc.), disability pension, disability benefits, support for the functional enhancement of organizations for persons with disabilities, income support for persons with disabilities, support for organizations for persons with disabilities, medical expenses for persons with disabilities, other benefits selected by persons with disabilities, support for increasing the social participation of women with disabilities, subsidies for the education of children with disabilities, MPVA benefits and allowances for soldiers and veterans with disabilities, etc.)
4. Health	• Public health expenditure, including costs of medicines and treatments, as well as investments in medical facilities (e.g. NHI, LTCIE, medical benefits, WCI (medical care benefits), collective healthcare, Fixed Healthcare Fund, support for vulnerable groups (e.g. improving conditions at psychiatric institutions), etc.)
5. Family	• Cash and in-kind benefits for caring for and raising children and other dependent family members (e.g. Support for infants and toddlers (e.g., childcare subsidies, Nuri Curriculum, childcare assistance, etc.), support for the education of children of vulnerable groups and from rural communities, adoption support, support for missing children searches, after-school program support, support for the protection of children from sexual abuse/ violence/ and abduction, family support for single-parent/multicultural/low-income families, support for the protection of women from violence, etc.)
6. ALMPs	• Benefits for the purposes of improving the employable conditions and/or the income-earning abilities of beneficiaries (e.g. Maternity Protection Program, Employment Security Program, Occupational Competency Development Program, Direct Employment Program, occupational training programs, employment services, employment subsidies, entrepreneurial support, income support, etc.)
7. Unemployment	• Benefits to guarantee certain levels of income for jobseekers and people who have been dismissed (e.g. UI benefits, income compensations, severance allowances, etc.)
8. Housing	• Housing benefits provided as part of the new customized benefits system of the MLSP
9. Other	• Benefits provided temporarily for people ineligible for the other eight program categories, or for people who require support in addition to that received from the other eight program categories (e.g. MLSP, emergency relief, rehabilitation support, welfare support for the homeless, EITCs, disaster relief allowances under the military and special post office pensions, support for Koreans in Sakhalin, support for public rental housing, support for the improvement of obsolete public rental housing, support for North Korean defectors, subsidies for the recovery of damaged private properties, cultural vouchers, etc.)

When categorizing expenditure projection by nine different categories of SOCX, health programs took up 43.8 percent of entire social expenditure in 2013, followed by old age programs at 24.2 percent. The share of these two programs are expected to continue to grow in the future, to reach 85.9 percent of total expenditure by 2060. While public pensions and the noncontributory basic old age pension are predicted to comprise 11.1 percent of GDP by 2060 due to the rapid rise in demand for old age benefits, their proportion will still fall behind health benefits (13.6 percent of GDP by 2060). Family benefits comprised 8.6 percent of total expenditure in 2013, but will likely see a drop in share to 2.0 percent by 2060, so long as the current low birth rate continues.

〈Table 6-12〉 Projections for the nine categories of social expenditure

(Unit: ratio to GDP, %)

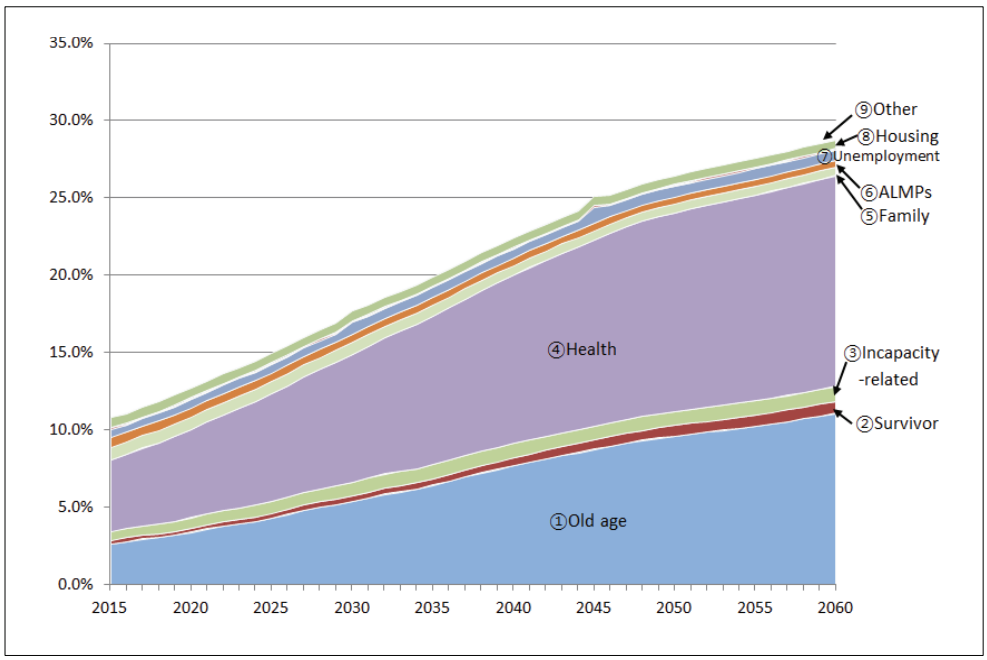
Year	Total	Old age	Survivor	Incapacity -related	Health	Family	ALMPs	Unemployment	Housing	Other
2013	9.6	2.3	0.2	0.5	4.2	0.8	0.6	0.3	-	0.6
2020	12.7	3.4	0.3	0.7	5.7	0.8	0.6	0.6	0.1	0.6
2025	14.9	4.3	0.3	0.8	6.9	0.8	0.6	0.6	0.1	0.6
2030	17.7	5.4	0.4	0.9	8.3	0.8	0.6	0.8	0.1	0.6
2035	19.9	6.4	0.4	0.9	9.6	0.7	0.5	0.6	0.1	0.6
2040	22.4	7.7	0.5	0.9	10.9	0.6	0.5	0.6	0.1	0.6
2045	25.1	8.7	0.6	0.9	12.0	0.6	0.5	1.1	0.1	0.6
2050	26.4	9.6	0.7	0.9	12.9	0.6	0.5	0.7	0.1	0.6
2055	27.6	10.2	0.7	0.9	13.3	0.6	0.5	0.7	0.1	0.6
2060	28.8	11.1	0.8	0.9	13.6	0.6	0.5	0.7	0.1	0.6

〈Table 6-13〉 Composition of the nine categories of social expenditure projections

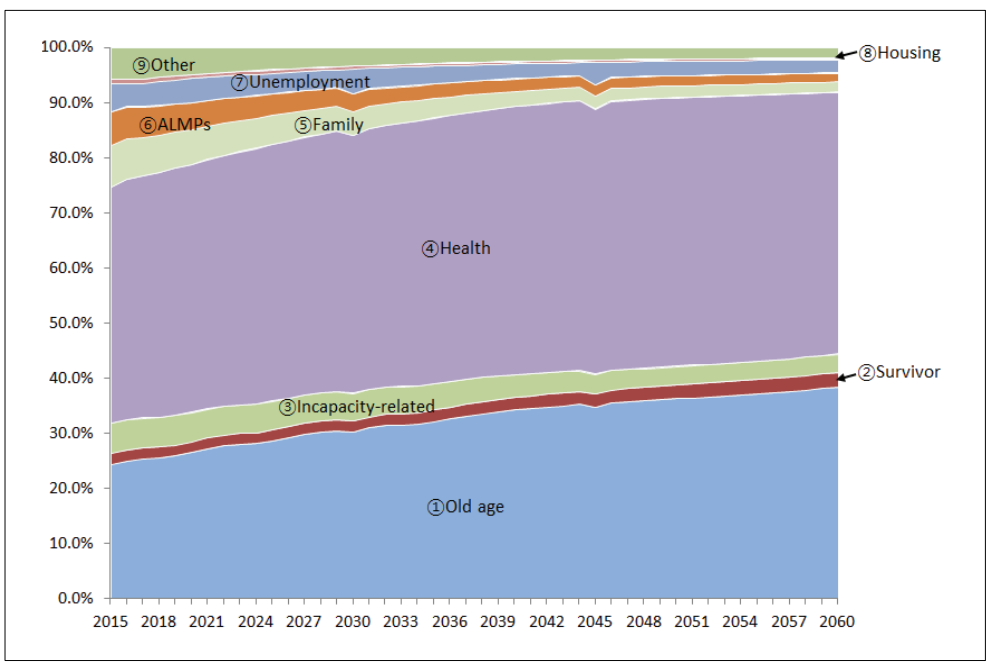
(Unit: %)

Year	Total	Old age	Survivor	Incapacity -related	Health	Family	ALMPs	Unemployment	Housing	Other
2013	100	24.2	1.9	5.5	43.8	8.6	6.6	3.0	-	6.4
2020	100	26.5	2.0	5.3	44.9	6.4	4.8	4.4	0.7	4.9
2025	100	28.7	2.0	5.2	46.5	5.4	3.9	3.8	0.6	4.1
2030	100	30.3	2.0	5.0	46.7	4.4	3.2	4.6	0.5	3.4
2035	100	32.2	2.1	4.7	48.1	3.6	2.6	3.2	0.4	2.9
2040	100	34.3	2.3	4.2	48.5	2.9	2.3	2.7	0.4	2.6
2045	100	34.8	2.4	3.6	48.0	2.4	2.0	4.2	0.3	2.3
2050	100	36.3	2.5	3.4	48.7	2.2	1.8	2.7	0.3	2.1
2055	100	37.1	2.7	3.3	48.2	2.1	1.7	2.5	0.3	2.0
2060	100	38.5	2.7	3.3	47.4	2.0	1.6	2.4	0.3	1.9

〔Figure 6-2〕 Ratio of the nine categories of social expenditure projections to GDP



〔Figure 6-3〕 Composition of the nine categories of social expenditure projections



(1) Old age programs

The combined ratio of old age programs and benefits to GDP was 2.3 percent in 2013, but their share is expected to rise to 11.1 percent by 2060. The proportion of old age programs and benefits in overall social expenditure will likely rise dramatically, from 24.2 percent in 2013 to 38.5 percent by 2060, due to growing demand and the aging population. Of the KRW 31 trillion set aside in the 2013 budget for these programs and benefits, the National Pension (KRW 11 trillion for the old age pension), the GEPS (KRW 10 trillion for the retirement pension), and the non-contributory basic old age pension (KRW 4 trillion) together occupy 79.5 percent of old-age programs. This ratio is expected to increase further to 91.3 percent by 2060.

〈Table 6-14〉 Old age program expenditure projections

Year	Amount (KRW 1 trillion)					Composition (%)				
	Total	National Pension (old age pension)	GEPS[1] (retirement pension)	Basic pension[2]	Other	Total	National Pension (old age pension)	GEPS[1] (retirement pension)	Basic pension[2]	Other
2013	31	11	10	4	6	100.0	34.7	30.8	13.9	20.5
2020	71	28	18	14	12	100.0	39.3	25.5	19.1	16.1
2025	120	47	27	30	17	100.0	38.7	22.6	24.6	14.1
2030	191	75	39	54	23	100.0	39.2	20.5	28.1	12.2
2035	278	116	51	80	31	100.0	41.7	18.4	28.9	11.1
2040	396	181	64	112	40	100.0	45.6	16.2	28.2	10.0
2045	530	261	75	145	49	100.0	49.2	14.1	27.4	9.3
2050	679	353	84	182	60	100.0	52.0	12.4	26.8	8.8
2055	839	448	100	218	74	100.0	53.4	11.9	26.0	8.8
2060	1,041	564	122	264	91	100.0	54.2	11.8	25.3	8.7

Notes: 1) GEPS: Government Employees Pension Service
2) Basic pension: non-contributory, tax-financed

(2) Survivor programs

The ratio of survivor programs and benefits to GDP was 0.2 percent in 2013, and is projected to increase to 0.8 percent by 2060. The proportion of survivor programs and benefits in overall social expenditure will also increase from 1.9 percent to 3.1 percent over the same period, due to the rise in the number of old age pension beneficiaries.

Of the KRW 2 trillion set aside for survivor programs and benefits in 2013, KRW 1.4 will go to the National Pension (survivor pension) and KRW 0.9 trillion will go to MPVA allowances and benefits for patriots and veterans. Together, these two programs comprise 94.2 percent of spending, and will likely occupy an overwhelming portion of survivor program expenditure in the future.

〈Table 6-15〉 Survivor program expenditure projections

Year	Amount (KRW 1 trillion)				Composition (%)			
	Total	Survivor pension	MPVA[1] allowances	Other	Total	Survivor pension	MPVA[1] allowances	Other
2013	2	1	1	0	100.0	55.4	38.8	5.8
2020	5	3	1	1	100.0	64.5	22.7	12.7
2025	8	6	1	1	100.0	71.8	16.8	11.5
2030	13	10	1	1	100.0	78.8	11.1	10.1
2035	18	16	1	2	100.0	85.2	5.9	8.9
2040	26	23	1	2	100.0	87.8	4.2	8.0
2045	36	32	1	3	100.0	90.0	2.5	7.5
2050	47	44	0	3	100.0	92.6	0.2	7.2
2055	60	56	0	4	100.0	93.0	0.0	7.0
2060	73	68	0	5	100.0	92.9	0.0	7.1

Notes: 1) MPVA: Ministry of Patriots and Veterans Affairs

(3) Incapacity-related programs

Expenditure on incapacity-related programs and benefits amounted to 0.5 percent of GDP in 2013, and will likely increase to 0.9 percent by 2060. These programs together comprised 5.5 percent of total social expenditure in 2013, but will likely see their share drop to 3.7 percent by 2060. Of the KRW 7 trillion set aside for these programs in 2013, KRW 2 trillion went to MPVA compensations for patriots and veterans and KRW 3 trillion to WCI benefits. The share of these two incapacity-related programs, currently at 79.4 percent, is expected to remain more or less at the same level (79.9 percent) through to 2060.

〈Table 6-16〉 Incapacity-related program expenditure projections

Year	Amount (KRW 1 trillion)				Composition (%)			
	Total	MPVA compensations	WCI[1] (incapacity benefits, etc.)	Other	Total	MPVA compensations	WCI[1] (incapacity benefits, etc.)	Other
2013	7	2	3	1	100.0	32.7	46.7	20.6
2020	14	3	7	3	100.0	24.2	51.7	24.1
2025	22	5	12	5	100.0	21.1	55.4	23.5
2030	31	6	18	7	100.0	19.5	58.4	22.1
2035	41	8	24	9	100.0	20.1	58.6	21.3
2040	48	11	27	10	100.0	22.8	55.6	21.6
2045	55	15	28	12	100.0	26.8	51.1	22.1
2050	63	20	30	14	100.0	31.1	46.9	22.0
2055	75	26	32	16	100.0	35.2	43.5	21.3
2060	89	35	36	18	100.0	39.5	40.5	20.1

Notes: 1) WCI: Workers Compensation Insurance

(4) Health programs

Health programs, taking up the largest share of social expenditure, amounted to 4.2 percent of GDP in 2013, and are expected to occupy an even greater share, 13.6 percent, by 2060. Their share in overall social expenditure is projected to increase from 43.8 percent in 2013 to 48.9 percent in 2044, before dropping to 47.4 percent in 2060. In 2013, NHI benefits (KRW 42 trillion), medical benefits (KRW 6 trillion), and LTCIE (KRW 4 trillion) together took up 91.0 percent of total expenditure in health programs; their collective share is expected to further increase to 97.5 percent by 2060.

〈Table 6-17〉 Health program expenditure projections

Year	Amount (KRW 1 trillion)					Composition (%)				
	Total	NHI	LTCIE[1)]	Medical benefits	Other	Total	NHI	LTCIE[1)]	Medical benefits	Other
2013	56	42	4	6	5	100.0	74.6	6.6	9.9	9.0
2020	121	97	7	9	8	100.0	80.4	6.1	7.1	6.5
2025	195	161	12	11	10	100.0	82.7	6.3	5.8	5.2
2030	294	247	20	14	13	100.0	84.2	6.6	4.9	4.3
2035	416	353	30	17	15	100.0	84.9	7.2	4.2	3.7
2040	561	478	45	21	18	100.0	85.1	8.0	3.7	3.2
2045	731	622	64	24	21	100.0	85.0	8.8	3.3	2.9
2050	911	772	86	28	24	100.0	84.7	9.5	3.1	2.7
2055	1,091	920	110	33	28	100.0	84.4	10.1	3.0	2.5
2060	1,283	1,078	135	38	32	100.0	84.1	10.5	3.0	2.5

Notes: 1) LTCIE: Long-term Care Insurance for the Elderly

(5) Family programs

Expenditure on family programs and benefits amounted to 0.8 percent of GDP in 2013, and is likely to decrease to 0.6 percent by 2060. This expenditure made up 8.6 percent of the entire social expenditure in 2013, but will similarly see its share drop to 2.3 percent by 2060. Childcare subsidies (for the Nuri Curriculum), home childcare allowances, and other such childcare benefits comprised 78.3 percent of all family-related expenditure in 2013, but their proportion is likely to decrease in the future, due to the declining birth rate.

〈Table 6-18〉 Family program expenditure projections

Year	Amount (in KRW 1 trillion)				Composition (%)			
	Total	Childcare subsidies (Nuri Curriculum[1)])	Home childcare allowances	Other	Total	Childcare subsidies (Nuri Curriculum)	Home childcare allowances	Other
2013	11	7	2	2	100.0	61.6	16.7	21.7
2020	17	11	3	4	100.0	61.1	17.0	21.9
2025	23	14	4	5	100.0	61.0	17.0	22.0
2030	28	17	5	6	100.0	60.9	16.6	22.5
2035	31	19	5	7	100.0	60.3	16.1	23.6
2040	33	20	5	8	100.0	58.9	15.9	25.2
2045	37	21	6	10	100.0	57.9	16.0	26.1
2050	42	24	7	11	100.0	57.5	16.0	26.5
2055	48	27	8	13	100.0	57.3	15.9	26.8
2060	54	31	8	15	100.0	57.1	15.7	27.2

Notes: 1) Nuri Curriculum is a public program which supports childcare and education costs for children aged 3 to 5 attending a kindergarten or a daycare center.

(6) ALMPs

Expenditure for ALMPs, which amounted to 0.6 percent of GDP in 2013, is likely to drop, albeit slightly, to 0.5 percent of GDP by 2060. The share of ALMPs in total social expenditure will similarly decline from 6.6 to 1.9 percent over the same period. And while ALMPs financed by general tax revenue took up 73 percent of total ALMPs expenditure in 2013,[58] this percentage is predicted to drop to 66.6 percent by 2060. Since it is reasonable to predict level of direct employment programs not to expand beyond current level, which occupy half the ALMP expenditure (except the employment security and occupational competency development programs), will likely decrease, thus reducing the share of ALMPs in GDP as well.

〈Table 6-19〉 ALMP expenditure projections

Year	Amount (in KRW 1 trillion)			Composition (%)		
	Total	UI[1] programs (Employment security and occupational competency development programs)	Other	Total	UI[1] programs (Employment security and occupational competency development programs)	Other
2013	8	2	6	100.0	27.0	73.0
2020	13	4	9	100.0	34.1	65.9
2025	16	6	11	100.0	35.1	64.9
2030	20	7	13	100.0	37.0	63.0
2035	23	8	15	100.0	35.2	64.8
2040	26	9	17	100.0	34.6	65.4
2045	31	11	20	100.0	36.9	63.1
2050	34	11	22	100.0	34.0	66.0
2055	38	13	25	100.0	34.0	66.0
2060	43	14	29	100.0	33.4	66.6

Notes: 1) UI: Unemployment Insurance

58) Except for the employment security and occupational competency development programs operating based on the UI Fund.

(7) Unemployment programs

Unemployment expenditure is likely to jump to 1.1 percent of GDP by 2045 from 0.3 percent in 2013, before dropping to 0.7 percent by 2060. Unemployment spending, focused on paying out unemployment benefits, took up 3.0 percent of total social expenditure in 2013 and is projected to increase to 4.7 percent by 2030 before declining to 2.7 percent by 2060.

〈Table 6-20〉 Unemployment program expenditure projections

Year	Amount (in KRW 1 trillion)			Composition (%)		
	Total	Unemployment benefits (jobseeker allowances)	Other	Total	Unemployment benefits (jobseeker allowances)	Other
2013	4	4	0.3	100.0	93.5	6.5
2020	12	11	1	100.0	93.7	6.3
2025	16	15	1	100.0	93.7	6.3
2030	29	27	2	100.0	93.8	6.2
2035	28	26	2	100.0	93.8	6.2
2040	31	29	2	100.0	93.8	6.2
2045	64	60	4	100.0	93.8	6.2
2050	50	47	3	100.0	93.8	6.2
2055	58	54	4	100.0	93.8	6.2
2060	64	60	4	100.0	93.7	6.3

(8) Housing programs

If one were to re-categorize housing benefits that have been provided as part of the MLSP so far into the category of housing programs beginning in 2014 (due to the introduction of the customized benefits system), the housing expenditure would amount to 0.1 percent of GDP.[59)]

59) See 〈Table 6-12〉

(9) Other programs[60)]

Expenditure on other programs is projected to maintain its ratio of 0.6 percent of GDP throughout the projection period. However, its share in total social expenditure will decrease from 6.3 percent in 2013 to 2.3 percent by 2060. Cash benefit in MLSP, education allowances, birth and funerary expenses, government discounts on grains, and other such minimum-living benefits comprised 53.1 percent of overall expenditure in this category, and this will remain more or less the case in the future.

〈Table 6-21〉 Expenditure projections on other programs[1)]

Year	Amount (in KRW 1 trillion)			Composition (%)		
	Total	Minimum Living security benefits (cash benefit, etc.)	Other	Total	Minimum Living security benefits (cash benefit, etc.)	Other
2013	8	4	4	100.0	52.6	47.4
2020	13	6	7	100.0	45.7	54.3
2025	17	8	9	100.0	47.1	52.9
2030	21	10	11	100.0	48.1	51.9
2035	25	12	13	100.0	48.9	51.1
2040	30	15	15	100.0	49.5	50.5
2045	35	17	17	100.0	50.0	50.0
2050	40	20	20	100.0	50.4	49.6
2055	46	23	23	100.0	50.7	49.3
2060	52	27	26	100.0	51.0	49.0

Notes: 1) Not classified in OECD SOCX ①~⑧

4. Social expenditure projections by program type

Public social expenditure can be divided into four categories according to the type of programs it supports: namely, social insurances, public assistance, social

60) Programs that do not fit into 1)~8) classifications of SOCX

compensations, and social services. Public assistance forms the social security system that guarantees minimum living and supports the self-sufficiency of citizens who are unable to manage their living by themselves. It includes basic old age pension benefits, cash benefit from MLSP, rehabilitation assistance, disability pension benefits, and EITCs. Social compensations provide support for certain groups, and in Korea include compensations for Koreans in Sakhalin, MPVA compensations for veterans, Saetomin support (for North Korean defectors), living support for women forced into sexual slavery by the Japanese army during World War Ⅱ, compensations for people who have been injured or given their life for just causes, emergency relief, and the like. Social insurances refer to the four public insurances, including the National Pension, as well as NHI, LTCIE, the UI, WCI, and the Special Post Office Pension. Social services are provided for vulnerable groups such as senior citizens, children, persons with disabilities, and women.

Expenditure on social insurances will radically increase in the coming decades, due to the rising demand for public pension benefits and the aging population. Spending for public assistance, which includes the basic old age pension and cash benefit of MLSP, will similarly increase its share of total expenditure. Public assistance amounted to 1.2 percent of GDP in 2013, and this ratio is expected to rise to 3.8 percent by 2060. Assuming that current social compensation and service programs will be maintained in the future, their ratio of expenditure to GDP will remain generally the same as the current level, or slightly lower, by 2060.

〈Table 6-22〉 Social expenditure projections by program type

(Unit: ratio to GDP, %)

Year	2013	2020	2025	2030	2035	2040	2045	2050	2055	2060
Total	9.8	12.9	15.1	17.9	20.1	22.6	25.3	26.6	27.7	29.0
Public assistance	1.2	1.7	2.1	2.6	2.9	3.2	3.4	3.6	3.7	3.8
Social compensations	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4
Social insurances	6.3	9.1	11.0	13.3	15.3	17.5	20.0	21.2	22.2	23.2
Social services	2.0	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.5	1.5

5. Social expenditure projections by benefit type (cash or in-kind)

Public social expenditure can also be divided by the type of benefits it provides for, i.e., cash benefits or in-kind benefits. The majority of social insurance benefits are provided in cash, such as basic old age pension benefits, the MLSP (living and housing benefits), MPVA benefits, unemployment benefits, disability pension and benefits, childcare allowances, and so forth. Spending on in-kind benefits, provided as part of LTCIE and medical benefits, can be estimated by subtracting expenditure on cash benefits from total spending.

ALMPs are excluded from social expenditure projections by benefit type, because the benefits those programs provide are difficult to categorize as either cash or in-kind (OECD, 2007).

In 2013, of the total social expenditure, 51.3 percent was spent on providing in-kind benefits as part of NHI and other programs. The remaining 48.3 percent was spent on providing cash benefits, including public pension payments. Spending on cash benefits, which currently stands at 4.4 percent of GDP, is projected to radically increase to 14.4 percent by 2060 due to an increase in demand for public pension payments. Similarly, expenditure on in-kind benefits is also expected to increase from 4.7 to 14.1 percent of GDP over the same period.

〈Table 6-23〉 Social expenditure projections by benefit type (cash or in-kind)

(Unit: ratio to GDP, %)

Year	2013	2020	2025	2030	2035	2040	2045	2050	2055	2060
Total	9.2	12.3	14.5	17.3	19.6	22.1	24.8	26.1	27.3	28.5
Cash	4.4	6.1	7.1	8.6	9.5	10.7	12.3	12.8	13.5	14.4
In-kind	4.7	6.2	7.4	8.7	10.0	11.3	12.5	13.3	13.7	14.1

Ⅱ. Social expenditure in major OECD countries[61)]

1. Characteristics of social expenditure in major OECD countries

A. Patterns in social expenditure by welfare regime type

Public social expenditure in Korea came to 9.8 percent of the country's GDP in 2013, which is about 44.3 percent of the OECD average from 2009 (22.1 percent). The Korean figure amounts to only 40.7 percent of the GDP ratio of the United Kingdom (the "Anglo-American type," 24.1 percent), a country that spends relatively less on public social programs than other OECD countries. The Korean figure, moreover, amounts to merely 32.9 and 30.5 percent of the GDP ratios of two other leading welfare states: Sweden (the "Northern European type," 29.8 percent) and France (the "Continental European type," 32.1 percent).

〈Table 6-24〉 Public social expenditure patterns of major OECD countries (1980 to 2009)

(Unit: ratio to GDP, %)

Country	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009
Sweden	27.1	29.5	30.2	32.0	28.4	29.1	28.4	27.3	27.5	29.8
Denmark	24.8	23.2	25.1	28.9	26.4	27.7	27.1	26.5	26.8	30.2
France	20.8	26.0	25.1	29.3	28.6	30.1	29.8	29.7	29.8	32.1
Germany	22.1	22.5	21.7	26.6	26.6	27.3	26.1	25.1	25.2	27.8
United Kingdom	16.5	19.4	16.7	19.9	18.6	20.5	20.3	20.4	21.8	24.1
United States	13.2	13.2	13.6	15.5	14.5	16.0	16.1	16.3	17.0	19.2
Japan	10.3	11.1	11.1	14.1	16.3	18.6	18.5	18.8	19.8	22.2
Korea	-	-	2.8	3.2	4.8	6.5	7.5	7.7	8.4	9.6
OECD average	15.5	17.2	17.6	19.5	18.9	19.7	19.5	19.2	19.9	22.1

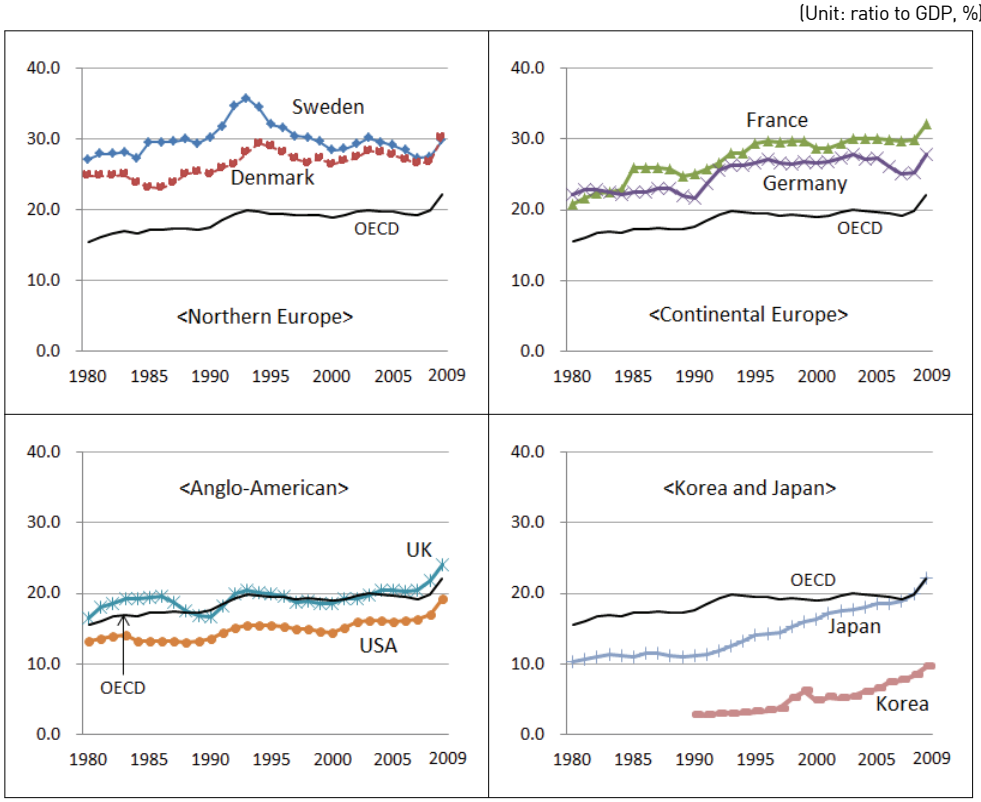
Note: Korea's level of public social expenditure, as stated in the 2013 budget, amounts to 9.8 percent of the country's GDP.
Source: OECD statistics

61) Given the purpose of this study, viz. preparing for government policies on social expenditure, the scope of social expenditure in this section is confined to public social expenditure only.

Levels of spending clearly differ among the different types of welfare regimes, though the spending gap has been increasingly narrowing in recent years. While simple comparison is impossible due to contrasts in the scales of economies and social contests, most OECD states today generate social expenditure that amounts to 20 to 30 percent of their respective GDPs. Welfare reforms undertaken by Northern European states in the 1990s have led to noticeable drops in their public social expenditure levels. The continental and Anglo-American welfare regimes, on the other hand, have either maintained or slightly increased their levels of public social expenditure.

[Figure 6-4] Public social expenditure patterns of regime-representative states (1980 to 2009)

(Unit: ratio to GDP, %)



Source: OECD statistics

Korea's level of public social expenditure increased by 11.7 percent per year over the 10 years between 1999 and 2009 - a pace about 1.8 times faster than the OECD average of member states that have successfully undertaken welfare reforms and consolidated current institutions.

〈Table 6-25〉 Rate of increase in public social expenditure (1999 to 2009)

(Unit: %)

Country	Korea	Sweden	France	Germany	Japan	United Kingdom	United States	OECD
Annual growth rate	11.7	3.9	4.1	2.1	2.6	6.9	7.2	6.6

The rate of increase in public social expenditure in Korea, however, is expected to slow over time, from 11.2 percent (between 2013 and 2020), to 8.8 percent (between 2020 and 2030), and to 6.2 percent (between 2030 and 2040), thus rendering an average yearly growth rate of 6.7 percent between 2013 and 2060. The gradual decline in the rate of growth will reflect the aging population and the decrease in the size of the elderly population as well as the maturity of pension systems.

〈Table 6-26〉 Rate of increase in public social expenditure by decade

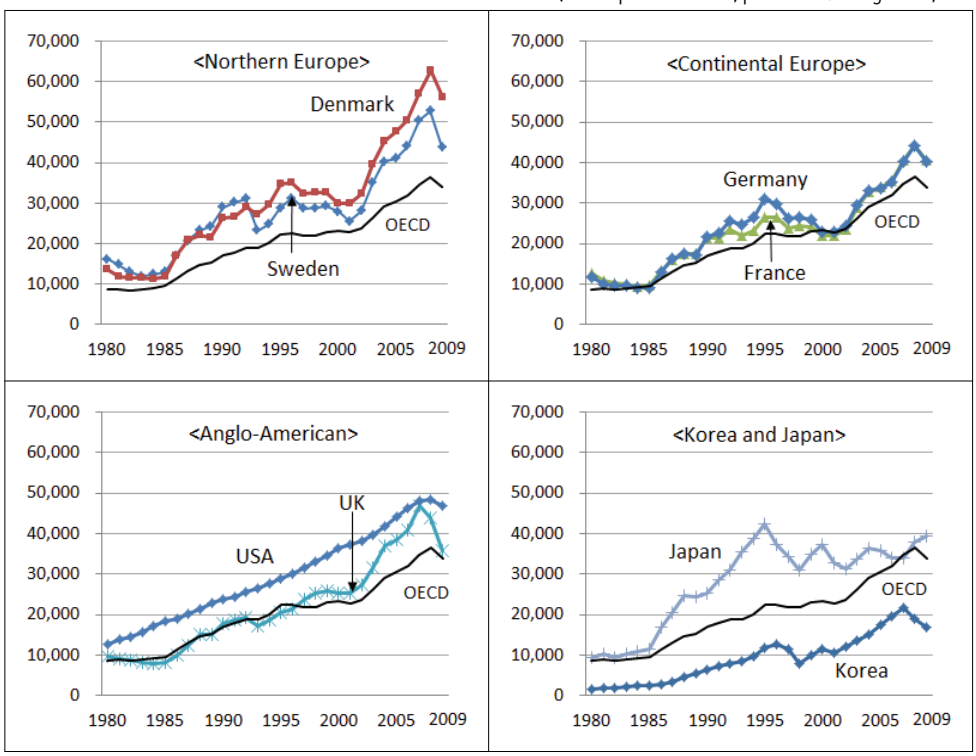
(Unit: %)

Decade	2013~2020	2020~2030	2030~2040	2040~2050	2050~2060	2013~2060
Annual growth rate	11.2	8.8	6.2	4.9	3.7	6.7

GDP per capita, in the case of Sweden and Denmark, increased at a rate hovering above the OECD average between 1980 and 2009, and the gap continues to increase. France and Germany, on the other hand, have closely tracked the OECD average for much of the same period, while the United Kingdom and the United States have maintained a consistent level of gap from the OECD average. Korea, however, remains below the OECD average, and the size of the gap remains consistent.

[Figure 6-5] GDP per capita in regime-representative states (1980 to 2009)

(Units: present value, present exchange rate, USD)



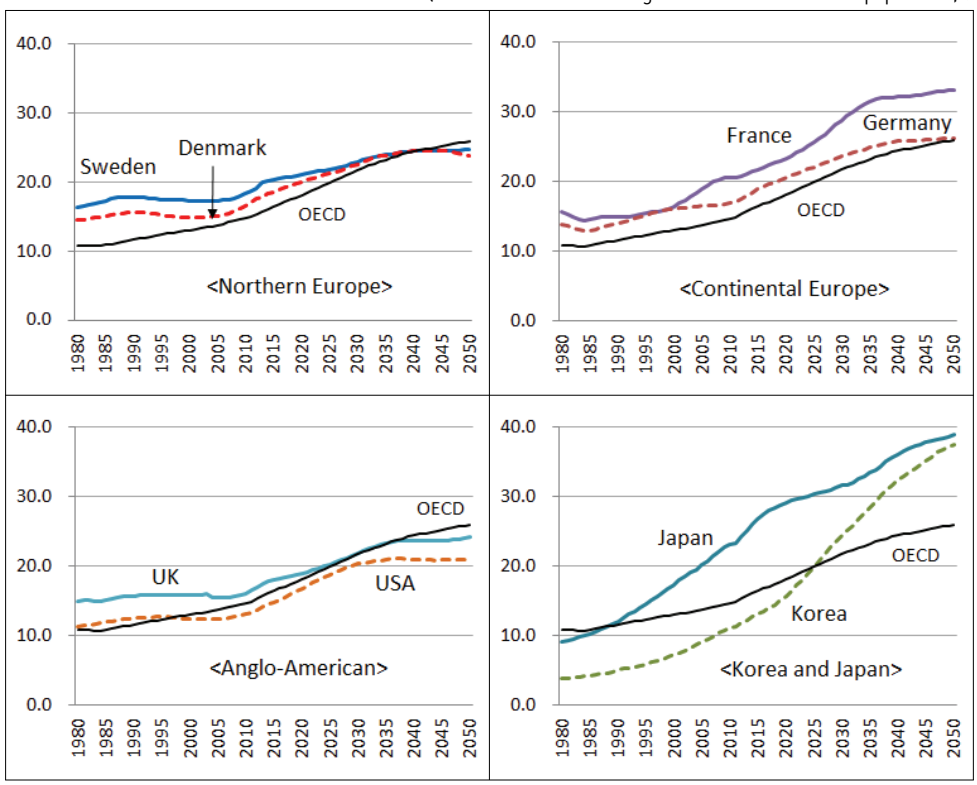
Source: OECD statistics

The population aging rate (i.e., ratio of people at age 65 or above to the total population), which bears a close relation to social spending, stood at 23.3 percent in Japan and 11.4 percent in Korea as of 2011. The rate ranges between 15 and 20 percent in most OECD countries. Post-2011 OECD projections[62] predict that the population aging rate will reach 25 percent or so in Sweden, Denmark, and France, and 33 percent in Germany. In the meantime, the population aging rate in the United States is expected to be 20 percent or so by 2050. For Korea and Japan, however, countries with rapidly aging populations, the population aging rate is projected to reach 40 percent by 2050.

62) OECD.Stat - Historical population data and projections (1950-2050) dataset.

[Figure 6-6] Populating aging rate patterns in regime-representative states (1980 to 2050)

(Unit: ratio of seniors at age 65 or above to the total population, %)



Note: The figures until and including 2011 are actual records. The figures afterward are projections.
Source: OECD.Stat - Historical population data and projections (1950-2050) dataset.

One way to gauge the gap between the level of increase in social benefits and the level of economic growth is by comparing the amount of public social expenditure per capita and the rate of increase in GDP per capita. Over the last two decades (1990 to 2009), the OECD average of public social expenditure per capita grew at a rate of 5.38 percent a year, which is 1.60 percentage points higher than the yearly GDP per capita growth rate (3.78 percent). Major OECD countries consistently maintain similar gaps. In the case of Korea, however, public social expenditure per capita has grown by 15.96 percent, which is 10.62 percentage points higher than the yearly GDP per capita growth rate (5.34 percent). The annual growth rate gap will likely narrow to 1.10 percentage points between 2030 and 2060 (to 4.97 percent and 3.87 percent

per capita, respectively). However, from 2010 to 2030, Korea is likely to maintain a gap of at least 3.85 percentage points, with public social expenditure per capita growing to 9.28 percent and GDP per capita to 5.42 percent.

〈Table 6-27〉 Public social expenditure and GDP growth rates in major OECD countries

(Unit: %)

Country	Per capita	1980s	1990s	2000s	1980 -1990	1990 -2009	1999 -2009	2010 -2030	2030 -2060
Sweden	SOCX(A)[1]	10.71	3.81	3.58	6.03	3.57	3.36	-	-
	GDP(B)	4.61	0.07	5.11	3.47	2.17	4.09	-	-
	(A-B)	6.10	3.74	-1.53	2.56	1.40	-0.73		
Denmark	SOCX(A)[1]	8.54	4.68	4.03	5.56	4.28	3.93	-	-
	GDP(B)	5.19	2.39	7.24	5.02	4.05	5.58	-	-
	(A-B)	3.35	2.29	-3.21	0.54	0.23	-1.65		
France	SOCX(A)[1]	10.75	4.69	3.67	6.12	3.99	3.37	-	-
	GDP(B)	3.72	1.35	7.14	4.14	3.43	5.34	-	-
	(A-B)	7.03	3.34	-3.47	1.98	0.56	-1.97		
Germany	SOCX(A)[1]	4.59	4.21	2.19	3.67	3.12	2.16	-	-
	GDP(B)	4.34	2.06	6.45	4.34	3.33	4.49	-	-
	(A-B)	0.25	2.15	-4.26	-0.67	-0.21	-2.33		
United Kingdom	SOCX(A)[1]	9.52	6.48	6.50	7.35	6.40	6.32	-	-
	GDP(B)	5.1	4.24	3.88	4.63	3.73	3.28	-	-
	(A-B)	4.42	2.24	2.62	2.72	2.67	3.04		
United States	SOCX(A)[1]	6.81	5.04	6.29	6.07	5.62	6.15	-	-
	GDP(B)	6.88	4.2	2.85	4.65	3.61	3.09	-	-
	(A-B)	-0.07	0.84	3.44	1.42	2.01	3.06		
Japan	SOCX(A)[1]	6.21	5.08	2.62	4.67	3.74	2.55	-	-
	GDP(B)	11.38	3.76	0.6	5.1	2.39	1.17	-	-
	(A-B)	-5.17	1.32	2.02	-0.43	1.35	1.38		
Korea	SOCX(A)[1]		21.46	14.53		15.96	11.22	9.28	4.97
	GDP(B)	14.17	5.14	4.57	8.28	5.34	5.52	5.42	3.87
	(A-B)		16.32	9.96		10.62	5.70	3.86	1.10
OECD[2]	SOCX(A)[1]	7.66	4.96	5.75	6.17	5.38	5.75	-	-
	GDP(B)	6.71	3.91	3.39	4.76	3.78	3.66	-	-
	(A-B)	0.95	1.05	2.36	1.41	1.6	2.09		

Notes: 1) "SOCX"refers to public social expenditure. Per-capita levels were obtained by dividing each country's public social expenditure (in that country's currency) by the size of that country's population. (SOCX per-capita data, on the other hand, reflects the gaps in purchasing power parity, or PPP.)

2) To obtain the OECD average, SOCX data on the PPP were applied to each country's SOCX and GDP data.

Source: OECD statistics

B. Characteristics of public social expenditure by function

One may infer the policy priorities and strategies of individual states in response to perceived social risks by analyzing the distribution of those states' public social expenditure by function. As of 2009, old age and health benefits were the biggest concerns and functions of public social expenditure in most OECD states. Old age programs, in particular, together formed the largest spending item in most major OECD states except for the United Kingdom, the United States, and Korea. The proportions of health, miscellaneous, and ALMP benefits in Korea hover above OECD averages (as of 2009), while the proportions of all the other categories of benefits remain below OECD averages. Due to the rapid aging of the population and the maturity of the public pension system in Korea, however, the ratio of health and old age benefits to the country's GDP is predicted to rapidly increase from 6.5 percent in 2013 to 24.7 percent by 2060, while the ratios of survivor, incapacity, unemployment, and housing benefits will increase at rates slower than those for old age and health benefits. In the meantime, the ratios of family and ALMP benefits may even decrease slightly. Korea's public social expenditure on these last two categories amounted to 1.4 percent of GDP in 2013. Though twice the current level of spending is necessary in order for their ratio to catch up with the OECD average of 2.8 percent, the projections show that their ratio will rather decrease to 1.1 percent of GDP by 2060. As the ratios of public pensions and NHI will increase in comparison, massive amounts of additional spending will be required even to maintain the composition of 2013.[63] Healthcare spending thus should be contained, by promoting seniors' health and by other means, and surplus resources should be rechanneled into family and ALMP benefits.

As public pension systems in Korea mature, their composition in total social expenditure will change significantly. The maturity of the public pension system and the aging of the population will lead to significant increases in old age and health

63) To maintain the composition of 2013, the ratio should be increased from 1.4 to 2.7 percent of GDP by 2030, and from 1.1 to 4.4 percent of GDP by 2060. This is based on the assumption that the total amount of expenditure will remain the same. Increasing expenditure on family and ALMP benefits, while maintaining the same levels of expenditure on all other benefits, will raise the total amount of public social expenditure.

spending, raising their share in total social expenditure from 68.0 percent in 2013 to 85.9 percent in 2060. The same categories occupy smaller shares of total social expenditure than the OECD average in the cases of Sweden and Denmark, at 58.7 and 52.7 percent, respectively, and greater shares in the cases of the United States and Japan, at 75.0 and 79.2 percent, respectively. The proportions of incapacity-related and family benefits in Korea's public social expenditure stood at 5.5 and 8.6 percent, respectively in 2013, below OECD averages, and are projected to decline further to 3.3 and 2.0 percent, respectively, by 2060. Sweden, Denmark, and the United

〈Table 6-28〉 Public social expenditure projections by function

(Unit: ratio to GDP, %)

Function	OECD (2009)	Sweden	Denmark	France	Germany	United Kingdom	United States	Japan	Korea 1) 2)			
									2013	2030	2040	2060
Total	22.1	29.8	30.2	32.1	27.8	24.1	19.2	22.2	9.62	17.7	22.4	28.8
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Old age	7.3	10.2	8.2	12.3	9.1	6.7	6.1	10.4	2.3	5.4	7.7	11.1
	(33.0)	(34.2)	(27.2)	(38.3)	(32.7)	(27.8)	(31.8)	(46.8)	(24.2)	(30.3)	(34.3)	(38.5)
Survivor	1	0.5	0	1.8	2.2	0.1	0.8	1.4	0.2	0.4	0.5	0.8
	(4.5)	(1.7)	(0.0)	(5.6)	(7.9)	(0.4)	(4.2)	(6.3)	(1.9)	(2.0)	(2.3)	(2.7)
Incapacity -related	2.4	5	4.9	2	2.3	2.9	1.5	1	0.5	0.9	0.9	0.9
	(10.9)	(16.8)	(16.2)	(6.2)	(8.3)	(12.0)	(7.8)	(4.5)	(5.5)	(5.0)	(4.2)	(3.3)
Health	6.6	7.3	7.7	9	8.6	8.1	8.3	7.2	4.2	8.3	10.9	13.6
	(29.9)	(24.5)	(25.5)	(28.0)	(30.9)	(33.6)	(43.2)	(32.4)	(43.8)	(46.7)	(48.5)	(47.4)
Family	2.3	3.7	3.9	3.2	2.1	3.8	0.7	1	0.8	0.8	0.6	0.6
	(10.4)	(12.4)	(12.9)	(10.0)	(7.6)	(15.8)	(3.6)	(4.5)	(8.6)	(4.4)	(2.9)	(2.0)
ALMPs	0.5	1.1	1.6	1	1	0.3	0.2	0.4	0.6	0.6	0.5	0.5
	(2.3)	(3.7)	(5.3)	(3.1)	(3.6)	(1.2)	(1.0)	(1.8)	(6.6)	(3.2)	(2.3)	(1.6)
Unemployment	1.1	0.7	2.3	1.5	1.7	0.5	0.9	0.4	0.3	0.8	0.6	0.7
	(5.0)	(2.3)	(7.6)	(4.7)	(6.1)	(2.1)	(4.7)	(1.8)	(3.0)	(4.6)	(2.7)	(2.4)
Housing[3]	0.7	0.5	0.7	0.8	0.6	1.5	-	0.2	-	0.1	0.1	0.1
	(3.2)	(1.7)	(2.3)	(2.5)	(2.2)	(6.2)	-	(0.9)	-	(0.5)	(0.4)	(0.3)
Other	0.8	0.7	0.9	0.4	0.2	0.2	0.7	0.3	0.6	0.6	0.6	0.6
	(3.6)	(2.3)	(3.0)	(1.2)	(0.7)	(0.8)	(3.6)	(1.4)	(6.4)	(3.4)	(2.6)	(1.9)

Notes: 1) Figures for 2030, 2040, and 2060 for Korea are based on social expenditure projections.
2) Local government programs in Korea are difficult to assign to one category or another, and have thus been excluded from SOCX categories.
3) The costs of building and acquiring public rental housing were included in the "Other" category.
4) Figures in parentheses indicate respective shares.

Source: OECD statistics

Kingdom are above OECD averages in terms of shares of incapacity-related and family benefits in total public social expenditure, and will remain so in the future. ALMPs and unemployment benefits, respectively, amounted to 6.6 and 3.0 percent of total social expenditure in Korea as of 2013, but will drop to 1.6 and 2.4 percent by 2060, due to decreases in the young population and as a result the workforce caused by the low birth rate. The reason that health benefits, ALMPs, and other programs occupied greater shares of Korea's social expenditure in 2013 than OECD averages for 2009 is because Korea's pension systems are relatively younger, and the relative share of old age benefits is therefore smaller than those of other OECD countries.

2. Long-term public social expenditure projections for OECD countries

A comparison of Korea's long-term(until 2006) social expenditure projection with current expenditure of OECD member states does not seem entirely relevant. Therefore, it may be worthy to check the relative position of future expenditure level of Korea with projections of other OECD member states. While it is very hypothetical, one can predict certain changing patterns in public social expenditure in major OECD countries based on the aging of the population.

A. Patterns in public social expenditure, 1980 to 2009

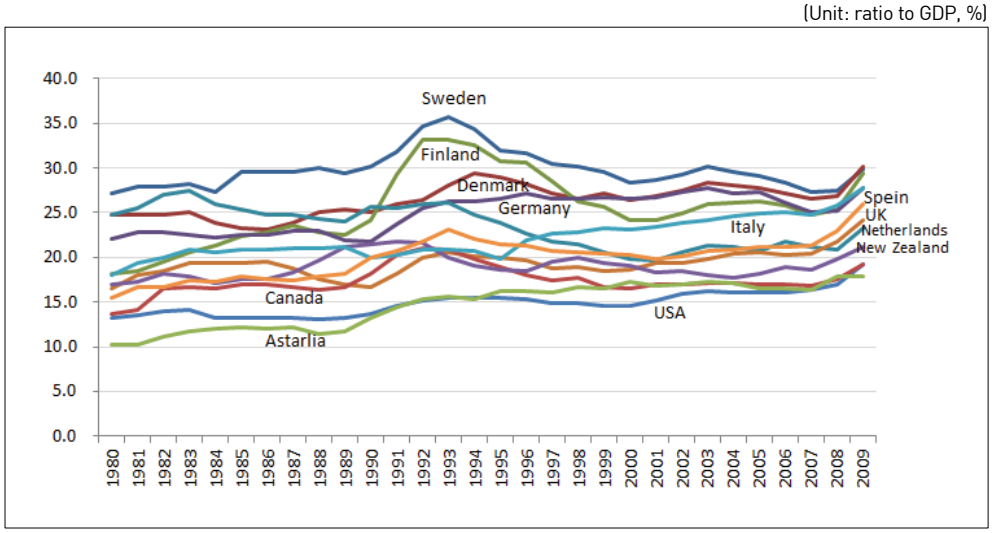
Before deciding a long-term future projection model, it is necessary to identify patterns in existing records on public social expenditure. Examinations of records on OECD countries' public social expenditure allow for dividing member states between those that are still in the growing phase (i.e., still trapped in the immediate aftermath of institutional reforms), and those that are considered mature states.

Different models of time series estimations are required, depending on whether the state concerned shows stable and consistent growth in social spending or abrupt changes. The rational assumption is that public social expenditure will maintain con-

sistent trends and patterns, unlike stock prices. Certain policy measures and institutional reforms, however, may exert far-reaching and fundamental changes.

〔Figure 6-7〕 Public social expenditure in OECD countries (1980 to 2009): growing-phase countries

(Unit: ratio to GDP, %)



Note: The periods of time in which public social expenditure changed dramatically were removed from the time series analysis to ensure the stability of the time series. See 〈Table 6-29〉 for the removed periods.
Source: OECD statistics

Considering that public social expenditure levels will remain consistent and stable in the long run, it is more rational to exclude periods of time marked by abrupt changes (resulting from institutional factors) than to include them in the time series analysis. It is unlikely that extreme changes in public social expenditure will remain in place in the long run. 〈Table 6-29〉 shows the specific time periods that were removed from each country's time series analysis.

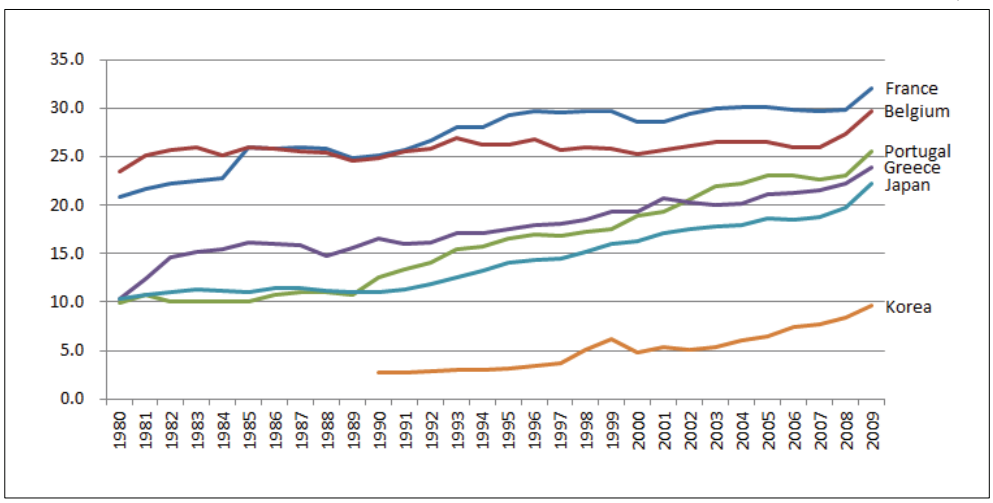
〈Table 6-29〉 Time periods removed from each country's time series analysis

Country	Sweden	Denmark	Finland	Germany	Netherlands	United Kingdom
Periods removed	(1990-1998)	(1990-1998)	(1990-1998)	(1989-1990)	(1980-1999)	(1988-1991)
Country	United States	Canada	Australia	New Zealand	Italy	Spain
Periods removed	(1992-1998)	(1989-1999)	(1988-1989)	(1989-1996)	(1990-1995)	(1991-2001)

On the other hand, for states with relatively stable patterns of public social expenditure, all time periods were included.

〔Figure 6-8〕 Public social expenditure in OECD countries (1980 to 2009): mature-phase countries

(Unit: ratio to GDP, %)



Source: OECD statistics

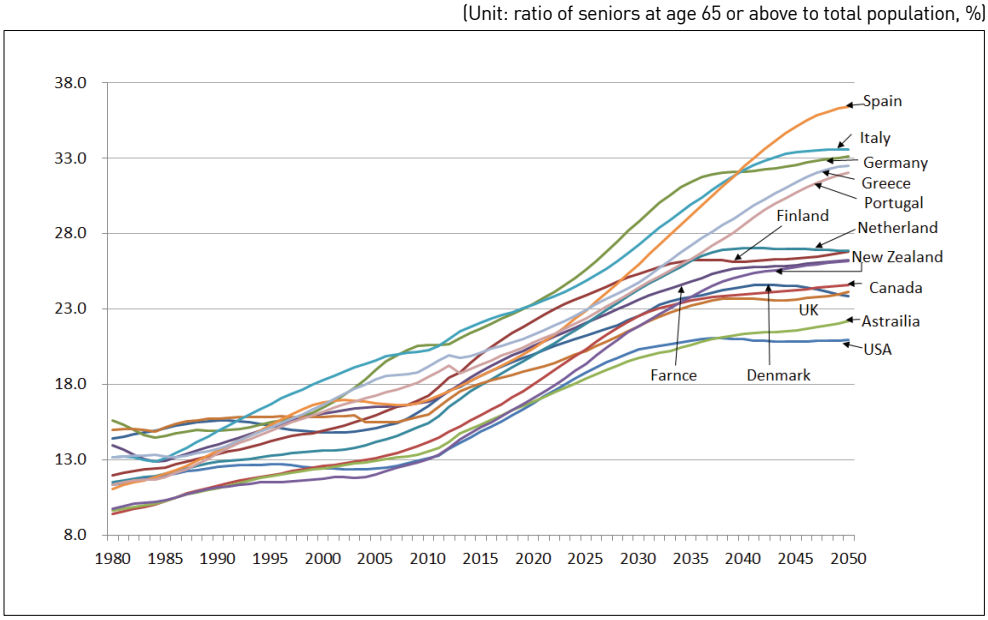
B. Aging populations

The most important variable in public social expenditure projections is the aging of the given population. The correlation between social expenditure and aging populations is self-evident. Time series analysis of public social expenditure requires a

projection model that can take into account past and future patterns of change. Thus for such a model the OECD countries were divided between those whose population aging will follow logarithmic functions and others whose population aging will proceed in an almost linear manner.

[Figure 6-9] Aging populations: OECD countries to which the ARMAX-based independent variable (aging rate) was applied as a logarithmic function

(Unit: ratio of seniors at age 65 or above to total population, %)

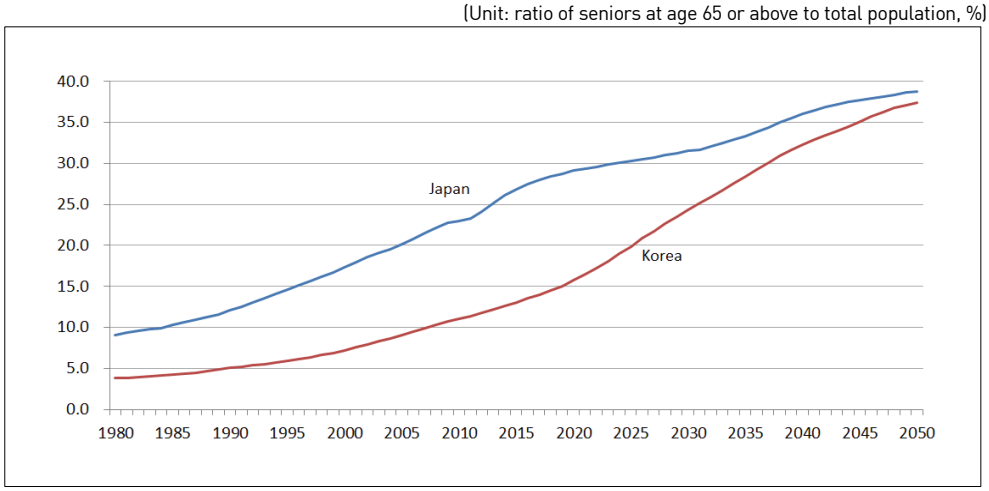


Source: OECD statistics

The graph below shows that in Korea and Japan, population aging is proceeding in an almost linear manner. Linear aging rates were thus applied to Korea and Japan.

〔Figure 6-10〕 Aging populations: OECD countries to which the ARMAX-based independent variable (aging rate) was applied in a linear manner

(Unit: ratio of seniors at age 65 or above to total population, %)



Source: OECD statistics

C. Projection model and population weight

This study applies projection models that are best suited for each country group. The main analysis tool was Autoregressive-moving-average model with exogenous variable model(ARMAX) method, which was selected due to our putting exogenous variable of population aging process. One advantage of using population aging as explanatory variable is availability of public data with time span longer than 50 years. The method based on ARMA(p,q) model which consist of two parts, an AR(Autoregressive model), a MA(Moving Average model) where p and q are the order of the autoregressive process and the order of the moving average process respectively. So our method, ARMAX model can be defined as very similar regression analysis with ARMA. According to definition of this method, we take into account auto-regression and the moving average simultaneously. Also, we conduct unit root test to determine stationarity of data, but SOCX, the dependent variable is stationary, hence we do not differentiate it. In cases where none of the models applied produced any significant results, the one with the greatest explanatory power was used. Social expenditure for each country was projected according to the general pre-

diction and analysis process. Of the 18 countries subjected to analysis, Sweden and Denmark were more compatible with differentiated models or with models that perform autoregressive integrated moving averages. When the significance of all the involved variables was low, the ARMAX (0,0,0) method was applied. The ARMAX (0,0,0) method neither differentiates the time series data nor performs autoregressive moving averages, and is thus, in effect, same as the general multiple linear regression method. Aside from Sweden and Denmark, all other countries were most compatible with the ARMAX (1,0,0) method that underwent the first order autoregressive process, with all the involved variables showing significance. The models used in this study are listed below.

$$SOCX_t = B_0 + B_1 \log(aging_t) + \sigma \quad \cdots (1)$$

: Sweden, Denmark

$$SOCX_t = B_0 + B_1 \log(aging_t) + AR(1) + \sigma \quad \cdots (2)$$

: 14 countries except Sweden, Denmark, Korea, and Japan

$$SOCX_t = B_0 + B_1 (aging_t) + AR(1) + \sigma \quad \cdots (3)$$

: Korea and Japan

The population aging rate, an independent variable, was applied linearly in the cases of Japan and Korea, and as a logarithmic function for the remaining countries. As Korea's public social expenditure system in the area of old age is still in the growing phase, its demand was projected based on the assumption that its pattern will be similar to Japan's.

An additional variable considered in the projection models was the absolute population size. While the contraction of public social expenditure mostly follows logarithmic functions, the speed of contraction differs among countries depending on the absolute population size. The assumption, in other words, is that the larger the size of a country's population, the more difficult it is for that country to contract expenditure, and vice versa. OECD countries were divided into three groups according to their

population sizes from 1980 to 2009: the above-average group, the average group, and the below-average group. Countries with relatively smaller or larger populations were given a population weight of -/+ 5 percent in projecting their public social expenditure. Countries in the median range were not given such a weight. A positive(+5 percent) weight was applied as an index of 1.05 to the explicatory variable.[64] A negative(-5 percent) weight is translated into an index of 0.95.[65]

〈Table 6-30〉 Population weights (1980 to 2009)

Population size (in 1,000s)	Weight	Countries
3,670~29,017	-5%	New Zealand, Portugal, Australia, Belgium, Canada, Denmark, Finland, Greece, Netherlands, Sweden
40,230~58,064	0	France, Italy, Korea, Spain, United Kingdom
80,561~265,289	5%	Germany, Japan, United States

Source: OECD statistics

D. Projection results

〈Table 6-31〉, 〈Table 6-32〉, and 〈Table 6-33〉 list the projection results for OECD countries.

〈Table 6-31〉 Projection model: ARMAX (0,0,0) and logarithmic population aging rates (PARs)

Country		Log-PAR	Constant	AR(1)	sigma	wald	prob >	n
Sweden	â	0.5135	0.6796	-	0.0078	2.4	0.1211	21
	s.e	0.3313	0.2527	-	0.0016			
	z	1.55	2.69	-	4.84			
Denmark	â	0.4066	0.5941	-	0.0059	42.44	0	20
	s.e	0.4039	0.3335	-	0.0011			
	z	0.54	0.46	-	5.33			

64) With the weight of plus-5 percent, log (population aging rate)$^{1.05}$ was applied as the explanatory variable.
65) With the weight of minus-5 percent, log (population aging rate)$^{0.95}$ was applied as the explanatory variable

〈Table 6-32〉 Projection models: ARMAX (1,0,0) and logarithmic population aging rates (PARs)

Country		Log-PAR	Constant	AR(1)	sigma	wald	prob >	n
Finland	â	0.461	0.6258	0.661	0.0066	55.69	0	20
	s.e	0.0985	0.0862	0.2779	0.0018			
	z	4.68	7.26	2.38	3.68			
Belgium	â	0.2271	0.4435	0.6967	0.0074	15.45	0.0004	30
	s.e	0.1263	0.1035	0.2226	0.001			
	z	1.8	4.28	3.13	7.48			
Germany	â	0.1807	0.3904	0.8941	0.0076	61.57	0	28
	s.e	0.1286	0.098	0.1318	0.0009			
	z	1.4	3.98	6.78	8.13			
France	â	0.4605	0.6437	0.9692	0.0074	237.64	0	26
	s.e	0.5135	0.3988	0.1578	0.0009			
	z	0.9	1.61	6.14	8.22			
Netherlands	â	0.4427	0.5858	0.0639	0.0061	17.32	0.0002	10
	s.e	0.1482	0.1256	0.4947	0.0023			
	z	2.99	4.66	0.13	2.64			
United Kingdom	â	0.4393	0.5557	0.9429	0.0073	65.91	0	26
	s.e	0.3128	0.2541	0.1291	0.0011			
	z	1.4	2.19	7.3	6.45			
United States	â	0.7209	0.8122	0.9221	0.0057	77.38	0	23
	s.e	0.5538	0.4805	0.1243	0.0008			
	z	1.3	1.69	7.42	6.99			
Canada	â	0.1992	0.3524	0.6979	0.0065	16.85	0.0002	19
	s.e	0.059	0.0569	0.3146	0.0012			
	z	3.37	6.19	2.22	5.22			
Australia	â	0.5301	0.6438	0.5707	0.0045	101.07	0	28
	s.e	0.0527	0.0487	0.1616	0.0009			
	z	10.05	13.2	3.53	5.02			
New Zealand	â	0.2948	0.4676	0.7378	0.0058	9.53	0.0085	22
	s.e	0.1638	0.1534	0.2391	0.0013			
	z	1.8	3.05	3.09	4.48			
Italy	â	0.3411	0.4943	0.8272	0.0064	37.17	0	24
	s.e	0.0679	0.0563	0.2147	0.0008			
	z	5.02	8.77	3.85	7.49			
Spain	â	0.3917	0.5314	0.8042	0.0088	8.82	0.0317	19
	s.e	0.2436	0.1954	0.3858	0.0024			
	z	1.61	2.72	2.08	3.7			
Greece	â	0.6101	0.671	0.8534	0.008	144.91	0	30
	s.e	0.129	0.1093	0.096	0.0011			
	z	4.73	6.14	8.89	7.12			
Portugal	â	0.7459	0.7931	0.9144	0.0064	44.34	0	30
	s.e	0.1158	0.1012	0.1955	0.0009			
	z	6.44	7.83	4.68	6.98			

〈Table 6-33〉 Projection models: ARMAX (1,0,0) and linear population aging rates (PARs)

Country		PAR	Constant	AR(1)	sigma	wald	prob >	n
Japan	â	0.838	0.021	0.8094	0.0044	73.22	0	30
	s.e	0.0993	0.015	0.234	0.0005			
	z	8.44	1.4	3.46	8.39			
Korea	â	1.234	-0.0375	0.4542	0.062	56.57	0	20
	s.e	0.1641	0.0141	0.1913	0.0012			
	z	7.52	-2.67	2.37	5.28			

A comparison of long-term projections of public social expenditure for OECD countries and KIHASA projections shows that the level of Korea's public social expenditure will be the second-lowest by 2050, next to Canada's. As the level of public social expenditure follows the population aging rate, levels are predicted to rise most rapidly in southern European countries.

〈Table 6-34〉 Long-term projections of public social expenditure for OECD countries

(Unit: ratio to GDP, %)

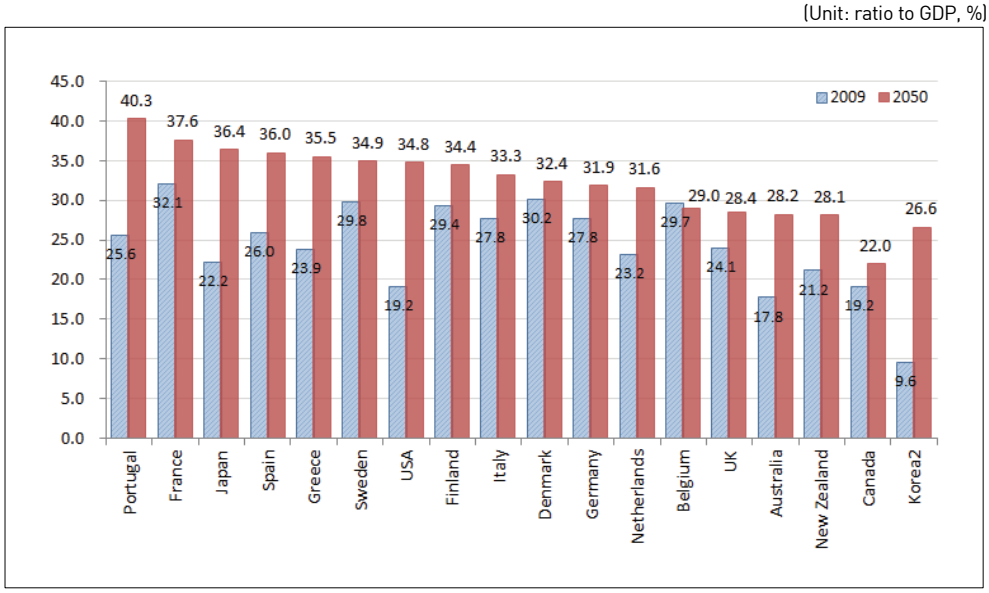
Country	2009[1]	2015	2020	2025	2030	2035	2040	2045	2050
Sweden	29.8	30.8	31.5	32.3	33.4	34.2	34.8	34.8	34.9
Denmark	30.2	28.2	29.4	30.4	31.5	32.4	32.8	32.9	32.4
Finland	29.4	28.8	30.8	32.2	33.3	34	33.9	34.1	34.4
Belgium	29.7	26.2	26.7	27.4	28.1	28.6	28.8	28.9	29
Germany	27.8	28.4	29	29.8	30.7	31.5	31.6	31.7	31.9
France	32.1	31	32.7	34.2	35.5	36.5	37.2	37.4	37.6
Netherlands	23.2	24.3	26.2	28	29.8	31.2	31.8	31.7	31.6
United Kingdom	24.1	22.9	23.9	25.1	26.6	27.7	28.1	28.1	28.4
United States	19.2	21.4	25.2	28.7	31.1	32	32.1	31.9	32.1
Canada	19.2	18.4	19.4	20.4	21.2	21.6	21.7	21.8	22
Australia	17.8	20.2	22.2	24.1	25.7	26.6	27.4	27.7	28.2
New Zealand	21.2	21.5	22.9	24.5	25.9	27	27.7	27.9	28.1
Italy	27.8	27.1	27.8	28.8	30.2	31.5	32.6	33.2	33.3
Spain	26	24.5	26.1	28.1	30.2	32.2	34	35.3	36
Greece	23.9	23.3	24.8	26.7	28.6	31	33	34.6	35.5
Portugal	25.6	24.7	27	29.3	31.9	34.3	36.8	39	40.3
Japan	22.2	25.8	27.8	28.9	30	31.6	33.9	35.4	36.4
Korea 1[2]	9.6	12.4	15.6	20.8	26.3	31.3	36.1	39.5	42.4
Korea 2[3]		11	12.9	15.1	17.9	20.1	22.6	25.3	26.6

Notes: 1) Figures for 2009 are actual records (OECD statistics).
2) Korea 1 applies the ARMAX (1,0,0) method.
3) Korea 2 shows long-term projections using deterministic actuarial method by the KIHASA.

〔Figure 6-11〕 were obtained using time series data that exclude periods of dramatic change and on the assumption that the level of public social expenditure follows the population aging rate. The actual levels will thus vary depending on a given country's social and economic atmosphere.

〔Figure 6-11〕 Public social expenditure of major OECD countries (2009 and 2050)

(Unit: ratio to GDP, %)



Notes: 1) Figures for 2009 are actual records (OECD statistics).
2) Korea 2 shows long-term projections by the KIHASA.

3. Financing social expenditure

Public social expenditure is expected to rise dramatically in Korea in the coming decades, imposing heavier financial burdens on the Korean firms and households. It is therefore important that this study identify the required and reasonable rate of increase of such burdens to maintain soundness of fiscal balance. This study derives target total tax burden(general tax burden + payroll tax burden for social insurance) by using notion of relative budget balance. We need more information besides level of future social expenditure on future level of total government expenditure of Korea

and reasonable or permissible level of government fiscal deficit to derive target total tax burden.

This study refer shares of social expenditure to the total government outlays of major OECD member states to derive future share of government outlays to GDP. This study also calculated levels of fiscal deficit of major OECD member states by subtracting total government outlays ratio to GDP from total tax revenue ratio to GDP, which is labelled as "diff". OECD release official statistics of fiscal deficit for member states. However fiscal deficit includes other revenues than taxes, and this study selects "diff", difference between total tax revenue and total government outlays as reference fiscal deficit levels of major OECD member states.

The term "budget balance" can be understood in two different ways: normatively, as equal amounts of revenue and expenditure; or relatively, in comparison with other countries' budgets.

A. Normative budget balance

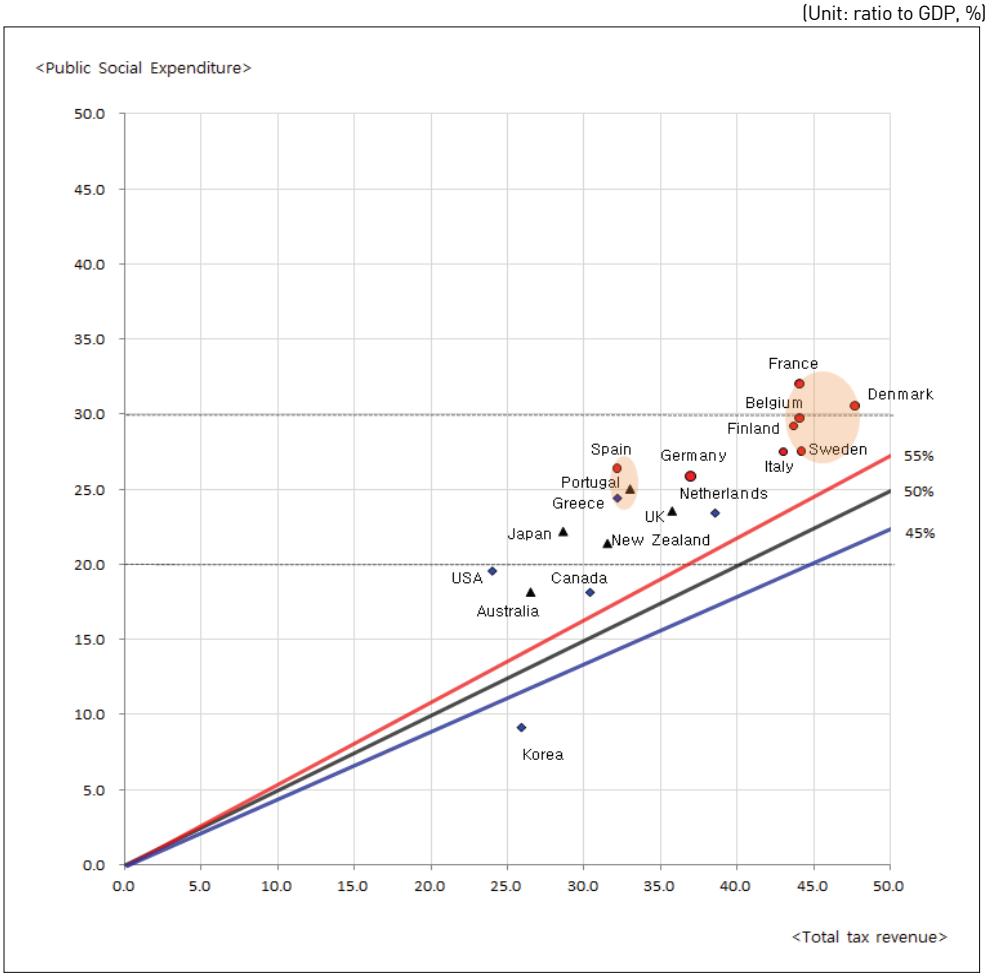
Normative budget balance refers to when the amount of expenditure equals the amount of revenue. In reality, no country possesses a budget so perfectly balanced. General government expenditure includes spending not only for social benefits but also for other items. In general, the share of social expenditure in overall government spending ranges from 45 to 55 percent. In other words, a country that spends 45 percent of its budget on social benefits spends 55 percent on general administrative activities and other items. Therefore, if social expenditure amounts to 25 percent of GDP of a given country and 45 percent of that country's total government expenditure, the proper ratio needed to maintain the budget balance would be 55.5 percent (0.25 / 0.45). Budget balance ratio of 55.5 percents means that a country should maintain national total tax burden ratio[66] of 45.45 percent to be in normative budget balance. The budget balance line can be charted for the amount of financial burden on households

66) total tax burden ratio: total tax revenue/GDP

by positing the level of social expenditure along the y-axis and the national burden rate on the x-axis. In the case of a country that spends 45 percent of its total government expenditure on social benefits, the budget balance line should be charted at 0.45 slope from origin. If we were to divide OECD countries into three groups according to share of social spending in total government expenditure, i.e., the 45-, 50-, and 55-percent groups, the budget balance lines should be drawn at 0.55, 0.5, and 0.45 above the zero point, respectively.

〔Figure 6-12〕 Normative budget balance line (2011)

(Unit: ratio to GDP, %)



Note: 55%, 50%, and 45% indicate share of public social expenditure as a % of total government outlay
Source: OECD statistics

Countries marked with red dots in 〔Figure 6-12〕 have a budget balance line starting at 0.55 slope from origin. Those marked with triangles have a budget balance line starting at 0.5 slope from origin. Those marked with diamonds have a budget balance line starting at 0.45 slope from origin. This analysis assumes that the entirety of government expenditure will be funded by tax revenue.

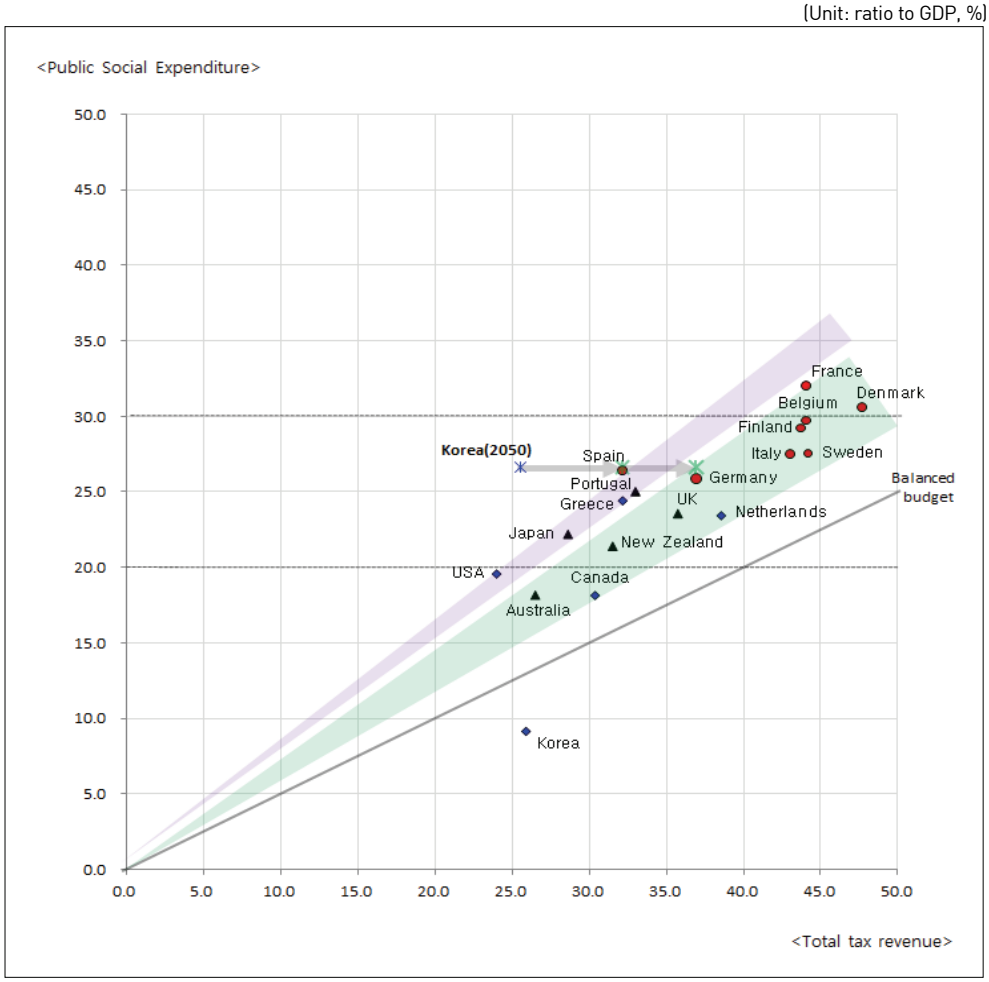
The horizontal distance between each country and its budget balance line represents the additional amount of fiscal burden required to maintain perfect fiscal balance. on that country's people. 〔Figure 6-12〕 shows that all states are quite far from reaching their normative budget balance lines under strong assumption that there are no other revenues than taxes.

B. Relative budget balance line

A relative budget balance line indicates the revenue-expenditure correlation of so-called "welfare states." The southern European budget balance line refers to the revenue-expenditure correlation of such countries as Portugal, Spain, and Greece. In general, the budget balance lines of countries renowned for their welfare spending, such as Denmark, Sweden, and the Netherlands, remain close to the normative budget balance line. In the case of Canada, the absolute amount of social expenditure is not as great, but the country's budget balance line is close to the normative one, indicating the relative health of its budget. France and Germany, representatives of continental welfare states, have budget balance lines close to each other. The budget balance lines of the United States, Japan, Greece, Spain, and Portugal are close to one another, and relatively lower than the lines of other countries.

〔Figure 6-13〕 Relative budget balance lines (2011)

(Unit: ratio to GDP, %)



Note: Balanced budget line of 0.5 slope for countries spending 50% of total government outlays on public social expenditure

Source: OECD statistics

C. Additional tax revenue required for Korea to match relative budget balance lines of OECD countries

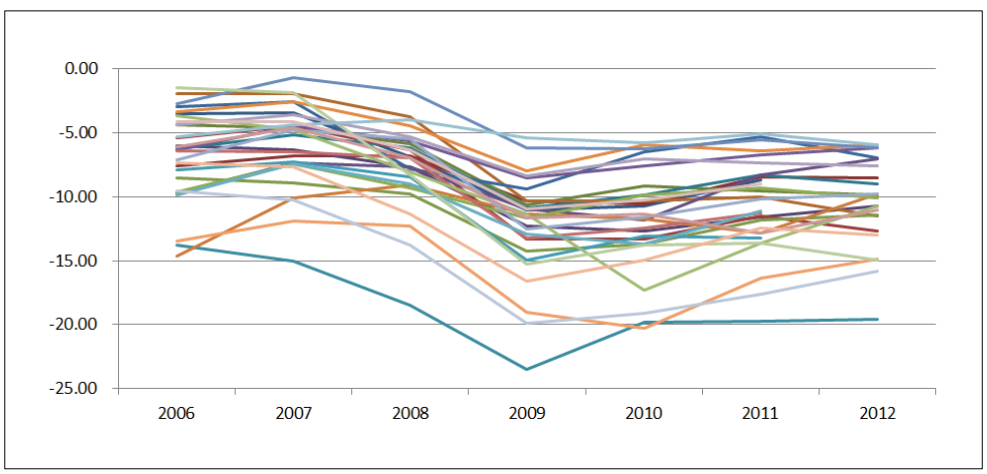
(1) Projection method

Korea's public social expenditure is projected to increase to 26.6 percent of GDP by 2050. Accordingly, this will raise the level of tax burden or government simply relies

on debt financing. At this moment, we postpone possibility of debt financing that is considered in the next section. In an effort to estimate the level of increase in tax burden in proportion to the increase in welfare expenditure, data on general government outlay ratio to GDP and the deficit ratio to GDP of major OECD countries are calculated and used as reference levels, based on the assumption that Korea will likely follow the relative fiscal balance changes of other major OECD countries.

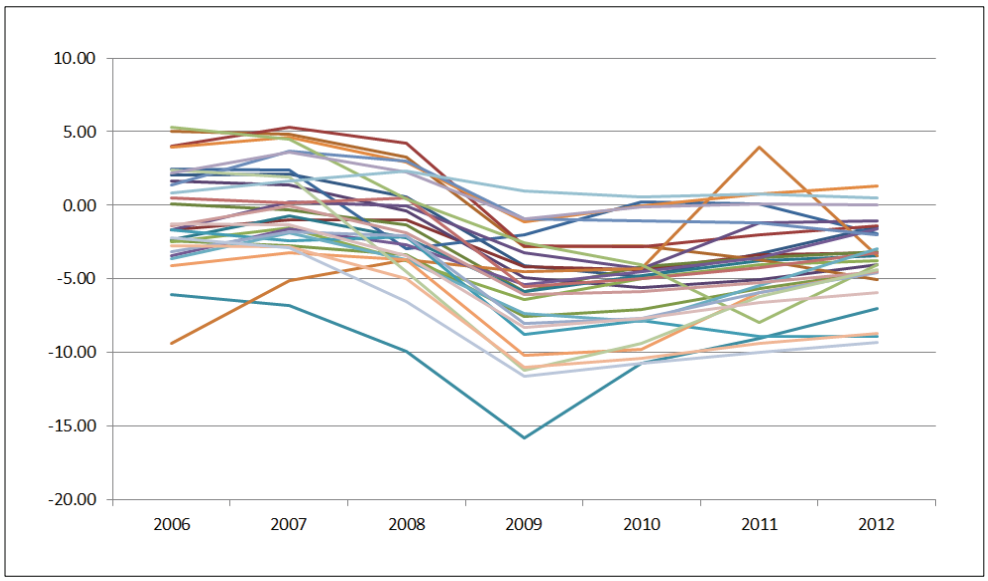
Since this study does not consider an option of debt financing and possibility of revenue other than tax the figures of "diff"(difference between total tax revenue and total government outlays) is used as levels of fiscal balance of OECD countries. As shown in Figure 〔Figure 6-14〕 and 〔Figure 6-15〕, OECD official statistics of government deficit and figure of "diff" do not diverge for the period of last six years. 〔Figure 6-16〕 shows that two statistics maintain relatively stable gap for the period of last six years, and thus it is reasonable to assume that choice of "diff" as a reference of fiscal balance will not distort the status of actual fiscal balance of major OECD countries.

〔Figure 6-14〕 Difference between total tax revenue and total government outlay of OECD countries ("diff")



Notes: Figure covers 34 OECD countries(Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States).
Source: OECD Tax Statistics

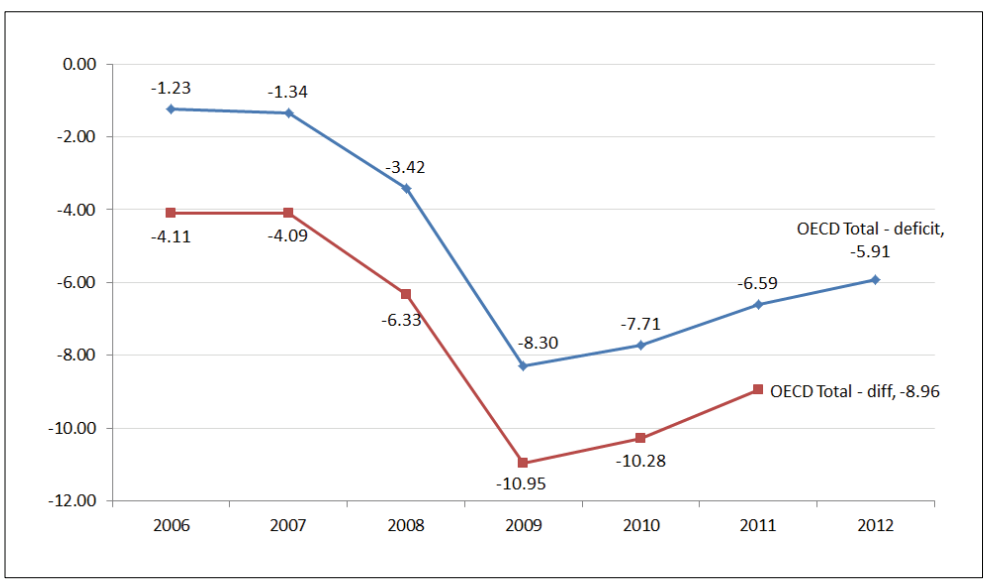
〔Figure 6-15〕 General government deficit of OECD countries



Notes: Figure covers 34 OECD countries(Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States).

Source: OECD Tax Statistics

〔Figure 6-16〕 Gap between OECD official deficit and “diff”



The process of estimating changes in the total tax burden ratio by referring fiscal ratios of OECD countries is as follows.

① Assuming that the ratio of Korea's total government outlay to public social expenditure is the same as the average of major OECD countries, the ratio of Korea's total government outlay to GDP by 2050 was calculated as follows:

$$\text{Korea's TGO (2050)} = \frac{\text{Korea's GDP-to-public SOCX (2050)}}{\text{TGO-to-public SOCX by nation (2011)}}$$

② Then the reference fiscal deficit ratio was calculated to determine the ratio of necessary increase in total tax burden for sustaining the estimated expenditure increases at each budget balance level.

$$\text{Reference fiscal deficit rate(diff)} = \frac{\text{difference between tax revenue and outlay}}{\text{TGO}}$$

③ The total government outlay-to-GDP ratio of 2050 was then multiplied by the reference fiscal deficit ratio to arrive at the estimated required increase in total tax burden.

④ The amount of fiscal deficit was then subtracted from the total government outlay-to-GDP ratio to arrive at the amount of public burden.

〈Table 6-35〉 Total tax revenue and total government outlay by country (2011)

(Unit: ratio to GDP, %)

Country	TTR	TGO	Public SOCX[1]		difference between revenue and outlay("diff")[2]	OECD official deficit
	(A)	(B)	(C)	(D=C/B) (%)	(A-B)	
Germany	36.9	45.2	25.9	57.3	-8.3	-1.2
France	44.1	55.9	32.0	57.3	-11.8	-5.7
Spain	32.2	45.7	26.4	57.8	-13.6	-6.2
Belgium	44.1	53.6	29.7	55.5	-9.5	-3.5
Sweden	44.2	51.5	27.6	53.5	-7.3	0.1
Italy	43.0	49.7	27.5	55.3	-6.7	-3.6
Finland	43.7	55.2	29.2	53.0	-11.5	-2.0
Denmark	47.7	57.7	30.6	53.0	-10.0	-3.7
Portugal	33.0	49.3	25.0	50.7	-16.3	-5.9
New Zealand	31.5	45.1	21.4	47.4	-13.6	-8.0
Australia	26.5	35.2	18.2	51.6	-8.7	-3.3
United Kingdom	35.7	48.2	23.6	48.9	-12.5	-9.4
United States	24.0	41.6	19.6	47.0	-17.6	-10.0
Netherlands	38.6	49.8	23.4	47.0	-11.3	-4.2
Greece	32.2	51.9	24.4	47.0	-19.7	-9.0
Canada	30.4	41.9	18.1	43.2	-11.6	-5.0
Japan[3]	28.6	41.9	22.2	53.0	-13.2	-8.9
Korea	25.9	32.3	9.1	28.3	-6.4	0.8

Notes: 1) Public social expenditure data for 2011 are estimated (OECD statistics). (The SOCX database covers OECD countries for the period 1980-2009 and provides aggregate estimates for 2010-2013)

2) Fiscal deficit refers to the difference between revenue and outlay, and therefore differs from the general government fiscal balance.

3) As no data are yet available with respect to Japan's public social expenditure beyond certain years, data from 2009 have been included here.

Source: OECD statistics; OECD Tax Statistics

(2) Projection results

a. Without taking debt financing into account

〈Table 6-36〉 shows estimated increases in the amount of total tax burden in Korea until 2050, assuming that Korea will follow changes in the budget balances of other

major OECD countries. In order for the country to achieve a relative budget balance line close to that of Germany and France by 2050, the total tax revenue should be increased to 36~38 percent of GDP. For a relative budget balance line close to that of Spain and Portugal, the total tax burden rate in Korea should still be raised to 32~35 percent of GDP.

〈Table 6-36〉 Total tax revenue projections for Korea to 2050

(Unit: ratio to GDP, %)

reference fiscal balance (2011)	SOCX (Korea) (2050)[1]	TGO[2] (Korea)	reference fiscal deficit rate[3] (ratio to TGO)	reference fiscal deficit	required total tax burden	Current total tax burden	Net increase in total tax burden
		(a)	(b)	(c=a×b)	(d=a+c)	(e)	(f=d-e)
Germany	26.6	46.46	-18.36	-8.53	37.93	25.9	12.02
France	26.6	46.45	-21.18	-9.84	36.61	25.9	10.70
Spain	26.6	46.06	-29.70	-13.68	32.38	25.9	6.47
Belgium	26.6	47.92	-17.75	-8.50	39.41	25.9	13.51
Sweden	26.6	49.74	-14.26	-7.09	42.64	25.9	16.74
Italy	26.6	48.07	-13.45	-6.47	41.61	25.9	15.70
Finland	26.6	50.20	-20.80	-10.44	39.76	25.9	13.85
Denmark	26.6	50.20	-17.40	-8.73	41.47	25.9	15.56
Portugal	26.6	52.45	-33.10	-17.36	35.09	25.9	9.18
New Zealand	26.6	56.13	-30.18	-16.94	39.19	25.9	13.28
Australia	26.6	51.53	-24.66	-12.71	38.83	25.9	12.92
United Kingdom	26.6	54.44	-25.84	-14.07	40.37	25.9	14.46
United States	26.6	56.63	-42.35	-23.98	32.65	25.9	6.74
Netherlands	26.6	56.59	-22.61	-12.80	43.79	25.9	17.89
Greece	26.6	56.54	-37.99	-21.48	35.06	25.9	9.16
Canada	26.6	61.53	-27.56	-16.96	44.57	25.9	18.66
Japan	26.6	50.18	-31.62	-15.86	34.31	25.9	8.41

Notes: 1) Public social expenditure for Korea up to 2050 was estimated based on budget projections made in Shin et al. (2013).

2) total government outlay (TGO) for Korea was estimated based on the assumption that the share of Korea's public social expenditure in TGO will be the same as the "D"-column figures in 〈Table 6-35〉 for other countries ($\frac{Korea's\ public\ SOCX\ by\ 2050\,(26.6\%)}{D}$)

3) Equals the E/B value of each country in 〈Table 6-35〉, i.e., relative size of fiscal deficit to TGO.

While Korea is anticipated to emulate the continental welfare regime in the long run, with the total tax burden ratio increasing consistently over time, the level of public social security will be comparatively lower in Korea, leading to the "middle burden/middle welfare" type by 2050 (〈Table 6-37〉).

〈Table 6-37〉 Welfare regime evolution in Korea at different budget balance standards (2050)

reference fiscal deficit	Burden / expenditure (2050): Korea		Welfare regime prospects by 2050 : Korea
	total tax burden (ratio to GDP)	Spending (ratio to GDP)	
Sweden	42.64	26.6	High burden / middle welfare
Italy	41.61	26.6	
Finland	39.76	26.6	
Belgium	39.41	26.6	
Germany	37.93	26.6	Middle burden / middle welfare
France	36.61	26.6	
Spain	32.38	26.6	Low burden / middle welfare

〈Table 6-38〉 shows the changes in Korea's public burden in response to increases in public social expenditure at different time intervals, based on the relative budget balances of major OECD countries.

〈Table 6-38〉 Additional Total tax burden necessary to match reference fiscal deficit budget balances of major OECD countries

(Unit: ratio to GDP, %)

reference fiscal deficit / Korea		Germany	France	Spain	Belgium	Sweden	Italy	Finland
2020	Social expenditure (SE)	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	SE / TGO	30.0	30.0	30.0	30.0	30.0	30.0	30.0
	Total tax burden rate	35.38	34.15	30.47	35.64	37.15	37.51	34.32
2030	Social expenditure (SE)	18.0	18.0	18.0	18.0	18.0	18.0	18.0
	SE / TGO	40.0	40.0	40.0	40.0	40.0	40.0	40.0
	Total tax burden rate	36.74	35.47	31.64	37.01	38.58	38.95	35.64
2040	Social expenditure (SE)	22.6	22.6	22.6	22.6	22.6	22.6	22.6
	SE / TGO	50.0	50.0	50.0	50.0	50.0	50.0	50.0
	Total tax burden rate	36.90	35.63	31.78	37.18	38.75	39.12	35.80
2050	Social expenditure (SE)	26.6	26.6	26.6	26.6	26.6	26.6	26.6
	SE / TGO	57.8	56.5	56.1	55.3	54.3	53.6	52.5
	Total tax burden rate	37.93	36.61	32.38	39.41	42.64	41.61	39.76

Note: Total tax burden rate of Korea in 2013 is 26.5%.

Additional total tax burden required to match reference budget balances of major OECD countries in <Table 6-38> only shows final rate to reach in each final year of projection. However it should be noted that total tax burden rate should increase as social expenditure increases to be in line with reference budget balances.

b. Taking debt financing into account

The foregoing analysis assumes that all increases in Korea's public social expenditure can be funded solely by raising the total tax burden. In reality, however, governments fiscal policy should include funding of spending by taking loans and incurring debts. Assuming that the average amount of debt of comparable countries sets the maximum amount of debts the Korean government could take on, required additional total tax burden rate should be lower than rates in <Table 6-39>.

〈Table 6-39〉 Trends in the general government debts of major OECD countries (1995-2011)

(Unit: ratio to GDP, %)

	1995	2000	2005	2006	2007	2008	2009	2010	2011
Italy	125.3	123.9	122.5	121.3	116.4	118.8	132.1	130.8	123.8
Belgium	135.4	113.6	95.9	91.6	87.9	92.6	101.0	100.8	104.1
France	66.5	67.9	78.9	73.9	73.0	79.2	91.4	95.5	99.2
Germany	55.7	60.9	71.7	69.8	65.7	69.8	77.4	86.0	85.6
Spain	69.3	66.7	50.9	46.3	42.5	48.0	63.1	68.2	78.7
Finland	64.5	52.5	48.5	44.7	40.4	39.7	51.5	57.0	58.6
Sweden	78.9	59.8	60.6	54.0	49.2	47.8	51.5	48.8	49.2
average[1)]	85.1	77.9	75.6	71.7	67.9	70.9	81.1	83.9	85.6
Korea			25.5	28.6	28.7	29.9	33.3	34.2	35.8

Notes: 1) Averages of seven countries
Source: OECD statistics

Therefore Korean government has options of fiscal policies either increasing total tax burden rate without debt financing or mixing the debt financing and tax financing. Since social insurance expenditures occupy around eighty percent of total social expenditure from year 2050, roughly eighty percent of required additional total tax burden has to come from social insurance burden.

7

Chapter

Conclusion and Policy Implications

7 Conclusion and Policy Implications

Ⅰ. Summary

Reviews and discussions on how to ensure the sustainability of the social security budget and improve related systems and institutions based on budget projection results are needed in Korea. Although proper debate on generation-specific, customized social security benefits require projections for at least the next four decades, taking into account likely socioeconomic changes such as the aging population and the low economic growth rate, the Korean government has not yet attempted such nationwide projections until now. Although the Korean government has conducted analyses for long-term budget projections of public pensions, with a few individual researchers performing the analyses and positing projections for public pensions' share in total social expenditure, no such efforts have been made so far with respect to long-term social benefits funded by general government expenditure, such as basic old age pension, disability pension, and medical benefits. Moreover, because existing projections from different ministries and departments utilize different demographic and macroeconomic variables, simple comparison is impossible.

The Framework Act on Social Security was thus amended in 2013, obligating the government to conduct social expenditure budget projections every two years to ensure the fiscal and institutional sustainability of social security systems as well as the accuracy of projections.

This represents the first government study in this regard, in which we examined the scope, period, and variables of projection as well as projection methods, and derived policy implications from the projections made herein.

The method of projection used in this study was developed by the Social Security Committee's Subcommittee for Fiscal Projection of Social Security in cooperation with the Center for Fiscal Projection of Social Security, the latter of which was estab-

lished primarily to assist the subcommittee in developing the budget projection model and analyzing projection results. As for the projection period, the year 2060 was selected as the end year, given the necessity to take into account demographic changes over the next few decades and in consideration of future population projections made by Statistics Korea for the period extending to 2060 (published in 2011). Since the law requires budget projections every two years, projections were made on the assumption that social security programs in the 2013 budget will remain intact until 2060. Changes to be made in MLSP benefits are already included in the 2014 budget, and were included in the projections as well, on the assumption that they will take effect in October 2014.

The nine categories of public social spending items in the OECD SOCX were used in this year's projections in order to facilitate international comparisons on the absolute levels of public social expenditure and appropriate public burden ratios. Social expenditure budget projection results can differ significantly, depending on which system of spending item categorization is used. The UN, for instance, has its own system for categorizing the government budget by function. The OECD SOCX and UN systems each produce significantly different amounts of NHI costs and housing construction costs when applied to projections for Korea. The OECD SOCX system was selected in the end because it is more concerned with the end recipients of social benefits than the sources (government budgets) of those benefits.

As for public pension programs, including the National Pension, existing budget projections of the involved ministries and departments were used, but by applying the same demographic and macroeconomic variables consistently across the board. The existing Budget Projection Committee calculations were also used with respect to such social insurances such as NHI, LTCIE, WCI, and UI.

As for the share of social spending in general government expenditure aside from public pensions and social insurance programs, new budget projection models were developed by taking into account long-term changes and the aging population while applying certain ratios to repeated spending items, such as center operating costs.

Our projections revealed that the amount of social expenditure in Korea will likely radically increase from the current KRW 130 trillion (9.8 percent of GDP) in 2013, to exceed the OECD average of 22.1 percent of GDP (from 2009) by 2040, and reach 29.0 percent of GDP by 2060. Much of the dramatic increase in social expenditure concerns defined social insurance benefits, particularly public pension and NHI benefits associated with the aging population. General government expenditure is projected to increase from 3.5 percent of GDP (KRW 46 trillion) in 2013, to 4.6 percent of GDP by 2030, and to 5.7 percent of GDP by 2060. Much of the increase in general fiscal expenditure will involve the gradual rise in the amount of basic old age pension benefits, which will take up 49 percent of general expenditure by 2060.

Old age and health benefits, which amounted to 2.3 and 4.2 percent of GDP by 2009, are expected to respectively multiply to 11.1 and 13.6 percent of GDP, and take up 85.9 percent of total expenditure, by 2060. Assuming that the current family programs and ALMPs will be retained until 2060, their respective ratios to GDP are expected to rather decrease over time, to 2.0 and 1.6 percent, respectively (from 8.6 and 6.6 percent in 2009).

Korea is likely to retain its spending structure which is mainly centered on social insurance spending. As the National Pension and other public spending programs mature and become consolidated over time, much social insurance spending will concern old age benefits. While the low birth rate and continuing employment insecurity will likely increase the demand for family programs and ALMPs, their shares in overall spending will rather decrease if the current programs are retained and the Korean government fails to mitigate social risks.

Should public social expenditure increase its ratio to GDP from 9.8 percent in 2013 to 29.0 percent by 2060, the fiscal deficit will normalize beginning in 2015, and increase its amount each year, raising the public burden rate to 16.1 percent of GDP by 2060. In projecting revenue, the amounts of insurance contribution and returns on investment were estimated for each social insurance program, assuming that tax and other forms of revenue will increase in proportion to GDP. In other words, revenue projections in this study assume that tax and fiscal revenue will remain at a fixed per-

centage of GDP, as will the national debt, while the amount of public burden will be raised in proportion to the increase in welfare expenditure. The public burden rate stood at 27.3 percent in 2013, but is expected to spike to 43.4 percent by 2060. Because revenue projections maintain the same social insurance rates, and most spending in excess of revenue will concern social insurance benefits, much of the increase in public burden will go to these benefits.

No consensus has been reached in Korea with respect to how to fund the projected increases in social expenditure, thus analyses of the raised public burden resulting from these projected increases are limited. It will be necessary in the future to determine more acceptable levels of increase in the public burden based on a more comprehensive fiscal evaluation of the levels of social expenditure and public burden, and an effective analysis of various measures for increasing revenue, including increases in social insurance contribution and improved national fiscal management.

Ⅱ. Policy implications

Public social expenditure in Korea amounted to 9.6 percent of GDP in 2009, which is significantly lower than the OECD average of 22.1 percent. However, social expenditure in Korea will increase radically in the coming decades, to as high as 22.6 percent by 2040. It is therefore of paramount importance to delineate the policy implications of this projection and the general trends in the social expenditure of other major OECD countries, particularly in light of the aging population and the consolidation of the public pension system.

Should the current social expenditure programs be retained into the future, the amount of social spending will increase dramatically, but without necessarily having the effect of improving the perceived level of welfare in the Korean public's opinion in comparison to other OECD countries. Korea adopted a social security system much later than other advanced economies, and began to consolidate the involved

programs only in the aftermath of the Asian Financial Crisis. The majority of benefits provided in Korea, however, are still based on individual wealth, and social security is far from being a general system.

In Korea, the amount of expenditure related to combating new social risks, such as family programs and ALMPs, are expected to significantly decrease in comparison to the amount spent on traditional social risks, such as old age and healthcare. Korea's social expenditure will therefore likely emulate the southern European model, or the model of the 1990s. Northern Europe and continental states, on the other hand, spend increasingly more on family programs and ALMPs that are intended to fight new social risks. Korea therefore needs to upgrade its social security system, which is currently centered on the elderly, and spend more on family programs and ALMPs that provide benefits for younger and productive generations, thus improving the competitiveness of the national economy.

The increase in old age and health benefits can also generate controversies over intergenerational justice and fairness. Public pension programs, such as the National Pension, are especially problematic because they burden one generation for the benefit of another. The amount of benefits in comparison to the amounts of lifetime income and burdens therefore needs to be balanced in a more equitable manner. Channeling more financial resources into family programs and ALMPs is thus necessary not only for boosting the welfare of productive generations and national productivity, but also for realizing fairness.

Major OECD countries have reformed their social expenditure structures, investing more resources into family programs and ALMPs to form greater human capital, generate more jobs, and facilitate social integration, while minimizing income transfer with the help of strong, work-incentive policies. Since family programs and ALMPs are positively related to the sustainability and stability of social security systems, they should be fostered and enlarged in Korea in the future.

The social projections in this study were made from a neutral perspective, intent on analyzing likely fiscal burdens attendant upon the declining birth rate, the aging population, and the consolidation of the pension system. The findings of this study

will provide important basic data for making structural and parametric improvements to NHI and other social programs.

Insofar as the current social security structure is retained in Korea, the amount of expenditure for old age benefits will increase dramatically due to the aging population and the consolidation of public pension programs. In order to ensure the fiscal sustainability of social expenditure and in consideration of public burden, it is crucial to launch a public discourse on social security programs and their future, informed by reliable and official governmental data. Policymakers in Korea will need to consider a broad array of factors in designing future social security programs, particularly taking into account the rapidly aging population and the acceptability of public burden increases.

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[Appendix 1] Demographic and economic assumptions

□ Future population projections from 2010 to 2060: Statistics Korea (2011)

〈Table 1〉 Assumptions for future population projections

Year		2010	2020	2030	2040	2050	2060
Total fertility rate (number of persons)		1.23	1.35	1.41	1.42		
Life expectancy	Male	77.20	79.31	81.44	83.42	85.09	86.59
	Female	84.07	85.67	86.98	88.21	89.28	90.30
International migration rate (per thousand persons)		1.67	0.71	0.57	0.63	0.64	0.52

Source: Statistics Korea (2011), Future Population Projections: 2010 to 2060.

〈Table 2〉 Future population projections from 2010 to 2060

Year	2010	2020	2030	2040	2050	2060
Total population (in 1,000s)	49,410	51,435	52,160	51,091	48,121	43,959
Workforce (15 to 64, %)	35,983 (72.8)	36,563 (71.1)	32,893 (63.1)	28,873 (56.5)	25,347 (52.7)	21,865 (49.7)
Elderly population (65 and above, %)	5,452 (11.0)	8,084 (15.7)	12,691 (24.3)	16,501 (32.3)	17,991 (37.4)	17,622 (40.1)
Youth population (0 to 14, %)	7,975 (16.1.)	6,788 (13.2)	6,575 (12.6)	5,718 (11.2)	4,783 (9.9)	4,473 (10.2)

Source: Statistics Korea (2011), Future Population Projections: 2010 to 2060.

□ Economic variables and assumptions: LTEFC (2013)

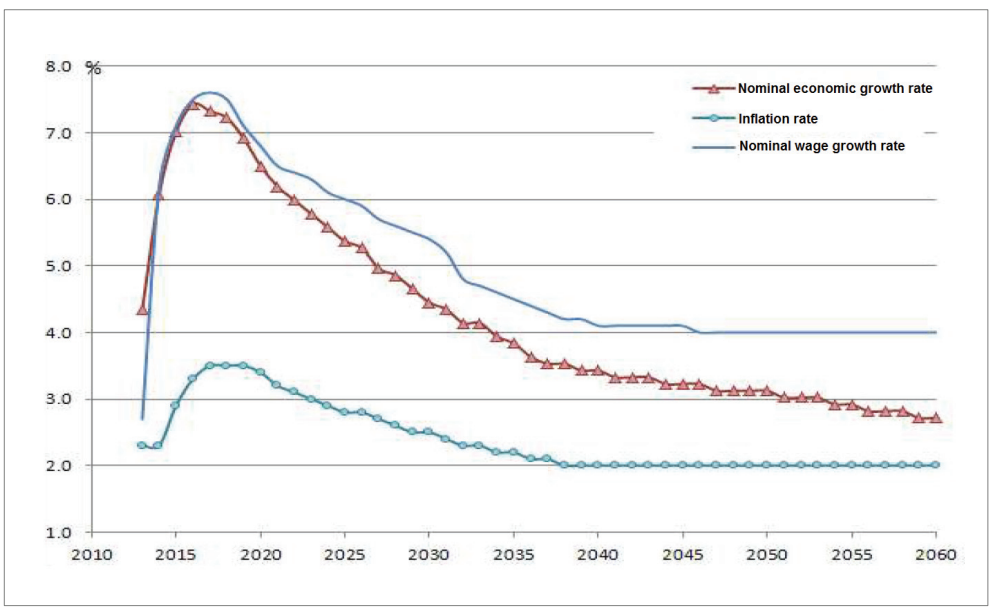
〈Table 3〉 Economic variables and assumptions: LTEFC (2013)

(Unit: %)

Year[1)]	2013~2020	2021~2030	2031~2040	2041~2050	2051~2060
Economic growth rate (nominal)	4.3~6.5	6.2~4.4	4.3~3.4	3.3~3.1	3.0~2.7
Wage growth rate (nominal)	2.7~6.8	6.5~5.4	5.2~4.1	4.1~4.0	4.0
Inflation rate	2.3~3.4	3.2~2.5	2.4~2.0	2.0	2.0

Note: Economic variables that change from year to year are indicated in the values applied to each period (group) of years.

〔Figure 1〕 Economic variables and assumptions



[Appendix 2] Application of the inflation rate as the rate of increase in general fiscal expenditure (tax-financed programs)

〈Table 4〉 Ratio of social spending in general fiscal expenditure to GDP based on application of inflation rate and benefits provided

(Unit: ratio to GDP, %)

Year	Total (A) + (B)	Social insurances (A)	General fiscal expenditure			
			Subtotal (B)	Non-contributory basic old age pension	Projection models[1)]	Other[2)]
2013	9.8	6.3	3.5	0.3	0.8	2.3
2020	12.5	9.1	3.4	0.6	0.7	2.0
2025	14.4	11.0	3.5	1.1	0.6	1.8
2030	17.0	13.3	3.7	1.5	0.6	1.7
2035	19.1	15.3	3.9	1.8	0.5	1.5
2040	21.6	17.5	4.1	2.2	0.4	1.5
2045	24.2	20.0	4.2	2.4	0.4	1.4
2050	25.5	21.2	4.3	2.6	0.4	1.4
2055	26.6	22.2	4.4	2.7	0.3	1.4
2060	27.8	23.2	4.5	2.8	0.3	1.4

Notes: 1) "Projection models" indicate programs for which structured models were developed, i.e., childcare subsidies, home childcare allowances, childcare services, childcare assistance, disability pensions, activity support for persons with disabilities, disability benefits, and elderly care services.

2) "Other"includes the MLSP, ALMPs (except programs operating based on the UI Fund), MPVA benefits and allowances, public rental housing benefits, miscellaneous expenditure, and locally-financed welfare programs.