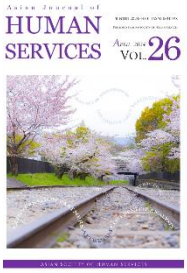

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ORIGINAL ARTICLE

Policy Effectiveness Analysis of the Korean Senior Employment and Social Activity Support Program (SESAP): Focusing on the Senior Internship Program

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ABSTRACT

The Senior Employment and Social Activity Support Program (SESAP) has been promoted as a policy to realize old-age income security, social participation in old age, and active aging by creating jobs and providing opportunities for the elderly aged 65 (or 60 or older) to participate in economic and social activities by investing state financing. As SESAP has been expanded over the past two decades, social interest has increased in the appropriateness, feasibility, and sustainability of the government-funded job policies on SESAP. This paper uses cost-benefit analysis to examine the economic effects of SESAP, especially focusing on the Senior Internship Program.

As a result of the cost-benefit analysis, we obtain the benefit-cost ratio of 3.39 for the Senior Internship Program (3.45 if the healthcare savings are included). In other words, the Senior Internship Program generates more benefits than the financial costs and is therefore considered to have a policy and economic feasibility.

The findings suggest that SESAP is effective in increasing income, improving health, and reducing socio-economic costs (including healthcare costs). Considering Korea's situation, which is experiencing a rapidly aging population and a lack of a public old-age income security system, the SESAP is significant as a multi-player policy that can respond to the "four hardships" of old age–poverty, no one to rely on, loneliness, and illness. Therefore, SESAP needs to be continually expanded and promoted as a social safety net for the elderly, and it is necessary to verify the effectiveness of SESAP from various perspectives.

Keywords: Senior Employment and Social Activity Support Program(SESAP), Senior Internship Program, Cost-Benefit Analysis

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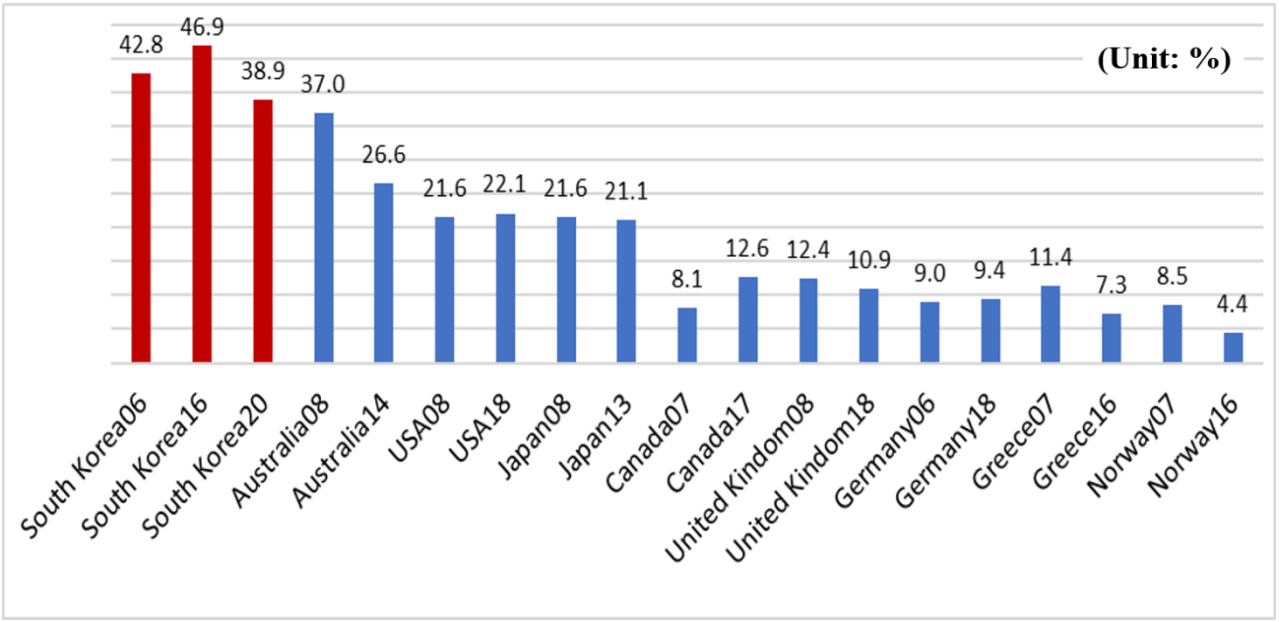
1. Introduction

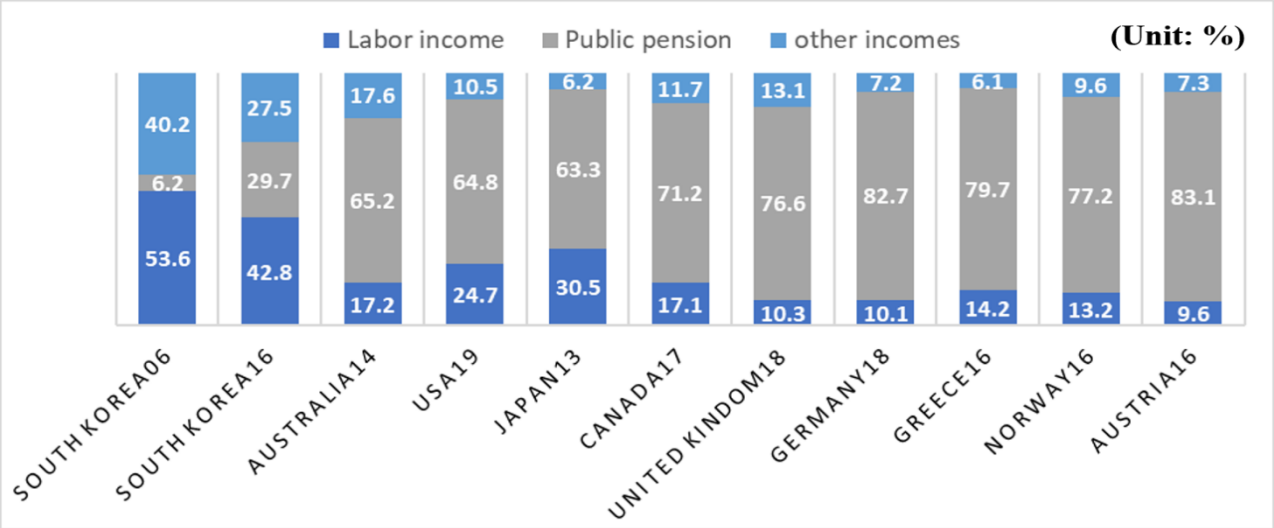
Korea has one of the fastest aging populations in the world. As of 2023, Korea has an estimated 9.5 million seniors aged 65 or older, accounting for 18.4% of the total population. With a declining birthrate and aging population expected to continue, the country is on the verge of entering a "super-aged society" in 2025, when the number of elderly people will exceed 20% of the total population. The country is expected to enter the super-aged society 25 years after entering the aged society in 2000.

Korea has been expanding its social security system to cope with its aging population, but the country's elderly population is still facing serious problems, with the country's elderly poverty and elderly suicide rates ranking the first in the Organization for Economic Cooperation and Development. As of 2020, the elderly poverty rate in Korea was 38.9%, more than double the OECD average. The reason behind the severe elderly poverty problem in Korea is the immature public pension system and the high proportion of elderly people who experience an income gap after retiring from the labor market. Currently, the elderly in Korea often re-enter (or remain in) the labor market after retiring from the labor market owing to insufficient pension income caused by the immaturity of the public pension system. This is reflected in the fact that labor income (or the sum of labor income and business income) accounts for more than 90% of the household income of the elderly in Korea, the highest level among OECD countries. However, even with labor income, there is a limit to being able to live a sufficiently comfortable life because the labor income obtained after retirement is often less than half of the income before retirement. In other words, the lack of a mature public retirement income security system and the significant decline in labor income have led to a high elderly poverty rate in Korea.



Source: LIS(Luxembourg Income Study) database. http://www.lisproject.org

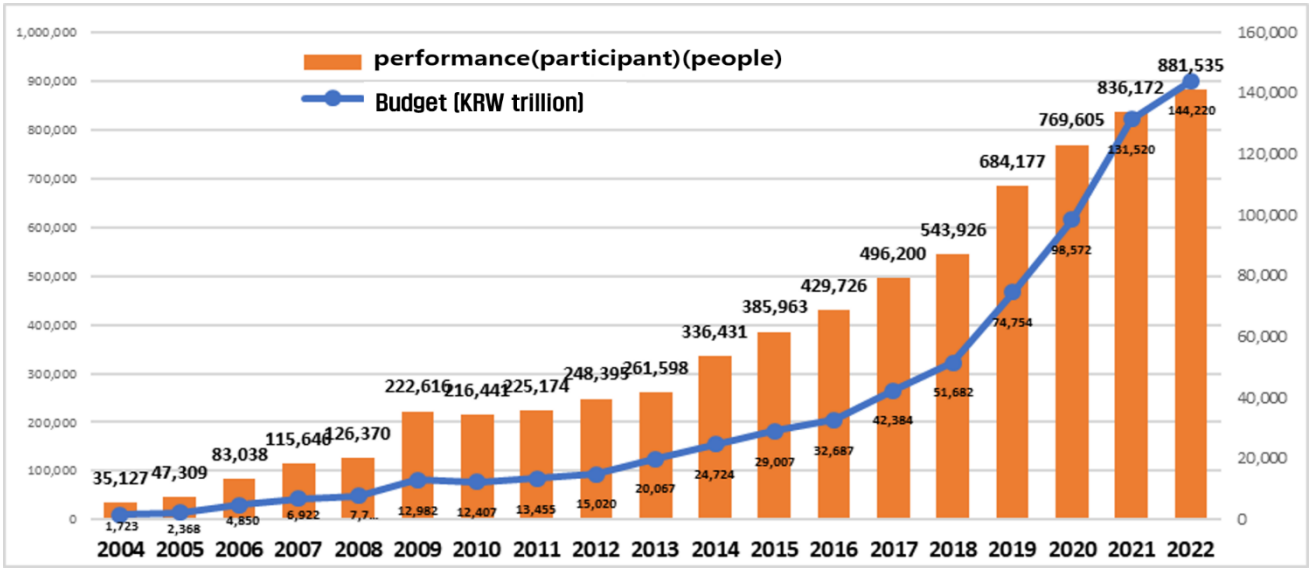
Figure 1. Elderly poverty rates in OECD



Source: LIS(Luxembourg Income Study) database. http://www.lisproject.org

Figure 2. Elderly household income Categories in OECD

Under this trend, the Senior Employment and Social Activity Support Program (SESAP) has been promoted as a policy to realize old-age income security, social participation in old age, and active aging by creating jobs and providing opportunities for the elderly aged 65 (or 60 or older) to participate in economic and social activities by investing state financing. Although some jobs are combined with private funding, SESAP has a policy distinction in that it is mostly a job program created through 100% public funding. The socio-economic necessity of SESAP has been emphasized as poverty, suicide, no one to rely on, and loneliness among the elderly in Korea have intensified, and the program has been continually expanded for about 20 years since its introduction in 2004.



Source: Korea Labor Force Development Institute for the Aged (2023). Statistical trends for the Senior Employment and Social Activity Support Program

Figure 3. Performance of SESAP in Korea (2004~2023)

As SESAP has been expanded over the past two decades, social interest has increased in the appropriateness, feasibility, and sustainability of the government-funded job policies on SESAP. Recently, as the sustainability of government budgets has been highlighted, socio-economic interest in job-type SESAP, which combines government budgets and private capital, has increased. Accordingly, several studies have been conducted to verify the economic and social effects of SESAP. Based on the results of previous studies analyzing the policy effectiveness of SESAP, it is found that SESAP creates positive effects such as improving the income level of participants (hereinafter referred to as participating seniors), improving the quality of life in old age, improving health, and restoring psycho-emotional functioning[13,2,10]. In addition, the studies' findings reveal direct effects on reducing medical expenses and alleviating the poverty rate of the elderly compared to before participation[13,14,2,10]. However, these previous studies are limited to some project types (i.e., public service, social service jobs) promoted by SESAP, so they do not verify the policy effectiveness of private capital-invested job programs, such as senior internships and senior-friendly companies. Public service and marketable program groups account for more than 80% of SESAP, so it is natural for them to be a key target of policy effectiveness evaluation. However, it is also necessary to verify the economic effects of job-type SESAP, which has recently received increasing social attention in terms of the sustainability of government budgets.

In this context, this study focuses on job-type SESAP, which has not been studied before, to analyze its economic effectiveness. In particular, the costs, benefits, and effects of the senior internship program, which represent a job-type SESAP, were comprehensively considered to verify the economic effects and suggest policy implications.

Table 1. Types of SESAP projects

Type	Targets	Main Contents
Public service	Income allowance beneficiaries (65 or older)	Volunteer activities that older persons participate in to improve their sense of self and accomplishment, and also to promote the public interests of their local communities
Social service	65 or older (some 60 or older)	Jobs that utilize the experiences and capabilities of older persons to provide services in areas that need social assistance
Social service leading model	60 or older	Jobs tailored to the new senior generation in the social service sector using external resources (human, material resources)
Marketable project group	60 or older	Employment for older persons for which a part of the labour costs is supplemented and year-round operation is conducted with additional business revenue
Employment placement		Employment that can receive a fixed wage throughout a working period by connecting those who have completed certain training or have the related work capabilities of the demand sources
Senior internship		Project that encourages continued employment and promotes the employment of those 60 or older by supporting companies with labour costs
Senior-friendly company		Support for the establishment of companies that employ a large number of older persons in various occupations where they may have a competitive edge

Source: Ministry of Health and Welfare (2023). 2023 Guide to the Senior Employment and Social Activity Support Programme. Recomposed.

2. Methods

2.1. Cost-Benefit Analysis (CBA)

Cost-benefit analysis is the most common analysis framework used to evaluate various policies or investment programs undertaken by the government[3], which can be defined as an economic evaluation method that monetarily measures the costs and benefits of various programs or policy alternatives expected to achieve the goals, and compare and evaluate them to determine the best alternative[4].

CBA is characterized as an economic analysis that evaluates government investment programs and is an objective analysis method that examines costs and benefits from a realistic and social perspective. In social welfare, CBA has the advantage of evaluating the outcomes of a program in monetary units, which allows analysts to directly compare the cost of a program with outcomes measured in the same unit of measure[12].

To select specific programs or policy measures to achieve policy goals, three methods are used to compare the costs and benefits of each alternative: the present value method, the internal rate of return method, and the B/C method. In this study, we focus on the benefit-cost ratio (B/C) criteria as an analysis framework to verify the economic effectiveness of the senior internship program, a representative private job program among SESAPs.

2.2. Analysis Data and Analysis Framework

The CBA of the senior internship programs will be divided into cost estimate, benefit estimate, and CBA. By analyzing the costs, benefits, and benefit-cost ratio of the SESAP financing as of 2022, it is necessary to confirm the necessity and financial efficiency of the financing.

The cost of the senior internship program refers to the direct financial investment of the central government, while the benefits are understood as the direct and indirect income generated through the financial investment and the resulting economic effects. The effect is understood as a positive effect that does not appear as a benefit but appears through the income generation of participating seniors. Costs are government budgets that include labor subsidies, operating costs, and success fees, which were identified through internal data from the Korea Labor Force Development Institute for the Aged (“the institute”).

Benefits can include increased income of participating seniors, increased tax revenue including both direct taxes and indirect taxes from the increased income and consumption, induced value-added in the whole economy by macroeconomic multiplier effects, and medical cost reduction of participating seniors. Specifically, the increase in earnings of participating seniors will be measured using internal data from the institute. The macroeconomic multiplier effect was determined using the scenarios and results of the economic analysis model, considering the proportion of participating seniors using the economic activity census data and the supplementary survey of the elderly. In addition, effective demand generation was estimated using data from the 2020 survey on the status of the elderly, which surveyed the status and situations of the elderly aged 65 or over. The increase in direct and indirect taxes was determined using the results of the economic analysis model, reflecting the effects of employment creation and income generation.

Table 2. Senior internship cost-benefit analysis framework

Category	Variables		Data
Cost	-Subsidies for labor costs -Outsourced operating expenses (program operating expenses)	-Labor cost Subsidy -Operating cost	Senior internship performance data (program operations and subsidy budget)
Benefit	-Increase in participants' income	-Increased income of participants	Wage data for senior internship participants (calculated as gross salary and average monthly income)
	-Participants' contribution to taxes (income tax, indirect tax)	-Increased income tax revenue (direct tax) -Increased VAT (indirect tax)	2020 elderly status survey data (calculated as average monthly income of elderly households and average monthly consumer spending)
	-Value added	-Value added induced	Industry-associate analysis result data (production inducement coefficient, added value inducement coefficient, job inducement coefficient, employment inducement coefficient)
Effect	-Reduced senior medical costs	-Medical cost reduction	Average annual medical expenses for seniors aged 65 years or older (average medical expenses per senior citizen) calculated by the National Health Insurance Service

3. Results

3.1. Cost Estimation

There are two ways to calculate the cost of the senior internship program. First, based on the fact that the job program allocates the same activity cost and activity time for each participating senior, we will calculate the cost using the number of participants and standard activity cost.

<Table 3> shows the performance of the senior internship program in 2020-2022. The number of participants was 15,547 in 2020, 32,268 in 2021, and 41,228 in 2022. The number of (matching) organizations implementing the program and the number of participating companies increased, and the rate of continuing employment increased after a decrease, but 91.6% of participating seniors continued to participate in the program after three months in 2022, which is deemed to have increased their loyalty to the business.

Table 3. Performance of Senior Internship Program (2020~2022)

(Unit: organization, people, %)

Category	2020	2021	2022
Number of (matching) organizations	159	235	294
Number of participating companies	4,350	9,200	12,991
Target number of participants (A)	17,500	38,000	45,000
Number of participants	15,547	34,434	46,570
Number of seniors in continuing employment(C)[1)]	14,943	30,268	41,228
Continuing employment rate (C/A*100)	85.4	79.7	91.6

Note : 1) Number of seniors in continuing employment - Participating seniors in continuing employment after the end of the three-month internship period

<Table 4> specifies the trend of the government investment budget for Senior Internship Program in 2020-2022. The total cost of the program was KRW 38.85 billion in 2020, KRW 84.36 billion in 2021, and KRW 99.9 billion in 2022. By budget category, the budget consists of grants of program support costs, non-grants of program support costs (operating costs), and various operating costs. The amount of wage subsidy support directly provided to eligible seniors participating in the senior internship program is set at KRW 36.57027 billion in 2020, KRW 82.12356 billion in 2021, and KRW 97.07298 billion in 2022. Here, program support costs (other than grants), general operating costs, operating allowances, travel and transportation costs, and fees paid are considered operating costs of the senior internship program in total because they do not directly provide wage support to the participating seniors. In 2022, the total cost of the senior internship program is allocated at KRW 99.9 billion, where KRW 97,072,975,412 is for wages, and the remaining KRW 2,827,024,588 is for operating expenses. Here, the wage support for seniors creates added value in the industrial sectors where the participating seniors are employed, and the final demand for the commodities in the macroeconomic model happens in the whole economy of Korea by the amount of support. And this increase in the final demand will create value-added in proportion to the multiplier as a whole.

Table 4. Trends in financial investment for senior internship programs (2020-2022)

(Unit: organization, people, %, KRW)

Category		2020	2021	2022
Budget		38,850,000,000	84,360,000,000	99,900,000,000
Spending		38,850,000,000	84,360,000,000	99,900,000,000
Budget by category	Program support cost (subsidies)	36,570,270,000	82,123,560,410	97,072,975,412
	Program support cost (non-subsidies)	1,486,475,670	1,241,672,540	609,928,338
	General operating cost	698,777,120	872,624,724	2,038,345,310
	Operating allowances	7,200,000	12,733,400	11,043,290
	Travel and transportation costs	23,603,820	39,408,926	87,630,650
	Fees paid	63,673,390	70,000,000	80,077,000

3.2. Benefit Estimation

We estimate the benefits of Senior Internship Program along the four paths; increased income of participants, increased tax revenue, induced value-added in the whole economy, and medical cost reduction of participants.

First of all, the calculation of the benefits of Senior Internship Program can be estimated in terms of the amount of increased income of participants supported from the public financing.

<Table 5> shows the total wage of participants both from the public funds and from the matching funds of participating companies in 2020-2022 periods.

In 2022, the total budget for Senior Internship Program was KRW 99.9 billion, and 46,570 participating seniors were employed by 12,991 participating companies. But the total government grant for the wage support was KRW 97,073 million. The total amount of matching costs from 12,991 participating companies was KRW 177,425,692,518, but the corporate

matching wage from participating companies was KRW 132,306 million. Therefore, the total wage paid to participating seniors was KRW 229,379 million. And the average monthly wage per person was KRW 2,087 thousand.

Table 5. Wage income generation from Senior Internship Program (2020-2022)

(Unit: KRW million, KRW thousand)

Year	Number of participants	Government grants (KRW million) (A)	Corporate matching Wage (KRW million) (B)	Total wage (KRW million) (A+B)	Average monthly Income (KRW thousand) (A+B)/12
2020	15,547	38,850	35,129	73,979	1,937
2021	34,434	84,360	213,625	297,985	1,961
2022	46,570	97,073	132,306	229,379	2,087

Note:1) Corporate matching wage refers to total wage minus government grants.

Source: Calculations using internal performance and settlement data from Korea Labor Force Development Institute for the Aged;

Estimates may differ from actual figures.

Now we estimate direct and indirect tax revenues from the increased income of the participants in Senior Internship Program. For the calculation of the direct income tax revenue, we need the new tax base of participants from the created work. And for the calculation of the indirect income tax, we need the new expenditure level of participants from the created work. Thus, we need to delve into the detailed income and consumption status of participants.

The Survey of the Status of the Elderly, which reports the actual status of the elderly aged 65 or older who are subject to the SESAP policy, provides an overview of the current status of household income, personal income, and household consumption of the elderly. According to the 2020 Survey of the Status of the Elderly, which reports the elderly's actual status in 2019, the household income of the elderly totaled KRW 30.265 million and the household earned income was KRW 10.77 million, which is the 44% of the household income.

<Table 6> details the absolute amount and the composition of annual total income for the elderly aged 65 or older, as presented in the 2020 Survey of the Status of the Elderly. The individual income of the elderly totaled KRW 15.576million and the individual earned income of the elderly was KRW 3.758 million, which is the 24.1% of the individual income of the elderly.

Table 6. Annual gross income for those aged 65 or older, composition by income item
(by age and by employment/unemployment status)

(Unit: KRW million, %)

Category		Annual total income	Earned income	Business income	Property income	Private transfer income	Public transfer income	Private pension income[2)]	Other income
Total[1)]									
	Amount	15.576	3.758	2.674	1.718	2.158	4.287	0.979	0.002
	Composition ratio	(100.0)	(24.1)	(17.2)	(11.0)	(13.9)	(27.5)	(6.3)	(0.0)
Employment/unemployment									
	Employed	22.378	8.785	6.291	2.253	1.629	2.795	0.625	0.
		(100.0)	(39.3)	(28.1)	(10.1)	(7.3)	(12.5)	(2.8)	(0.0)
	Not employed	11.865	1.015	0.701	1.426	2.446	5.101	1.172	0.03
		(100.0)	(8.6)	(5.9)	(12.0)	(20.6)	(43.0)	(9.9)	(0.3)

Notes: 1) Based on 10,097 total respondents (including proxy respondents)

2) Private pension income includes personal pension, retirement pension, and housing and agricultural pension.

Sources: 2020 Survey of the Status of the Elderly, Korea Institute for Health and Social Affairs

Since the average annual income of participating seniors in the SESAP, including those participating in Senior Internship Program, is estimated to be KRW 22.378 million in the employed state, it can be assumed that participation in Senior Internship Program will increase their income—at least on average—to over KRW 12 million, which is the minimum income level for the tax rate of 6% for the income tax.

The increase in wage income of Senior Internship Program participants additionally leads to an increase in tax revenue, which can be calculated as follows: Taxation refers to all taxes paid in relation to increased income, including income tax (including resident tax) as well as indirect taxes. To calculate the amount of taxes paid by the participants in the senior internship program, it is necessary to know the tax base and consumer spending patterns of each participant. Still, in practice, it is not easy to collect such data, so the average concept is used to calculate the amount of taxes.

The income tax on the income earned through the senior internship program is estimated as follows: An individual's income tax is determined by the tax base and tax rate, which are determined after income tax deductions and tax credits. According to the National Tax Service's 2022 National Tax Statistics Yearbook, the share of the tax base in earned income as of 2021 is 56.77%, and the average tax rate for the tax base below KRW 12 million is 6.0%. By applying this to the annual wage income increased by the senior internship program, the tax base and tax amount can be calculated. It is also possible to calculate the amount of annual income tax paid by each participant in the senior internship program.

<Table 7> shows the amount of income tax revenue generated by the senior internship program participants in 2022.

Table 7. Income tax revenue for participants in the senior internship program in 2022

(Unit: KRW million, %)

Participants' wage income	Average tax base	Tax rate for KRW 10 million or under	Participants' income tax
229,379	56.77%	6.0%	7,813

Indirect taxes are obtained by multiplying consumer spending by the indirect tax rate. By calculating the average monthly income and average monthly consumer spending of the elderly from the 2020 elderly status survey, multiplying it by the VAT rate, and dividing it by the population, we can calculate the indirect tax per capita.

According to the 2020 elderly status survey, the average monthly household income of the elderly is KRW 3.758 million, where the amount spent by the elderly on goods and services is KRW 1.475 million, making the share of consumer spending in their income 58.5%. By applying this share of consumer spending to the amount of wage income earned by participants in the senior internship program, the annual consumer spending-induced economic effect is derived. By applying a VAT rate of 10% and a VAT taxable volume rate of 50% to this estimate, the annual indirect tax payments are derived, and the indirect tax payments per participant are calculated. <Table 8> reveals the estimated amount of indirect taxes generated from the created income of participants in the senior internship program in 2022.

Table 8. Indirect taxes for participants in senior internship programs in 2022

(Unit: KRW million, %)

Participants' wage income	Estimated consumer spending	VAT rate	VAT taxable volume rate	Indirect tax
229,379	134,187	10%	50%	6,709

By adding up the income tax and indirect tax contributions of the senior internship program participants as measured above, we can estimate the annual tax paid by the participants. This is then divided by the number of participating seniors to estimate the amount of tax per capita.

Now we estimate the additional value-added in the whole economy, which is induced from the injection of income / consumption of senior internship program. For that purpose, we use inter-industry analysis results on the Korean economy by using 2019 Korea Input-Output Table.

When a senior internship program provides government expenditures of public funds to private firms as a wage cost subsidy, it acts as an injection into the firm's industry, generating macroeconomic value-added, employment, and job creation. Inter-industry analysis using input-output tables is used to examine the impact of this injection. As the basic year table for 2020 has not been created yet, the comparative year table for 2019 is utilized to perform various inter-industry analyses.

Inter-industry analysis is an economic analysis using various analysis coefficients such as the production inducement coefficient, using input coefficients calculated from input-output tables. Inter-industry analysis starts with the calculation of input coefficients that represent the raw material input composition of each industry sector. The production inducement

coefficient plays a vital role in inter-industry analysis by indicating the direct and indirect production spillover effects of each industry sector by the final demand. In other words, the production inducement coefficient indicates the production level directly or indirectly induced in each industry sector to satisfy one unit of final demand when it is created.

Under the implicit assumption that supply capacity and labor force in the whole economy are sufficient, the inter-industry analysis assumes that the changes in final demand cause the changes in domestic output and that value-added is generated by production activities, and consequently, the changes in final demand are the source of the changes in value-added. The value-added inducement coefficient indicates the unit of value-added directly or indirectly induced in the national economy as a whole when one unit of final demand for domestic products of an item industry sector occurs.

The wage support for SESAP through the senior internship program acts as a form of final demand for the industries involved, generating direct and indirect value-added from the inter-industry analysis. In the case of the senior internship program, the government's subsidy is considered as wage support for participating seniors, where participating companies supplement wages in line with the average wage for the industry through matching, while paying additional amounts for operational costs to carry out the program. In 2022, participating companies matched KRW 177,425,692,518 to hire participating seniors, where KRW 132,306,094,010 was allocated for salary costs and KRW 45,119,598,508 for operating costs. Hence, it can be concluded that in 2022, participating companies that employed participating seniors utilized KRW 274,498,667,930 in economic activities, including KRW 97,072,975,412 in salary support from the government. This amount becomes an injection at the macroeconomic level in each industry, generating added-value, job creation, and employment through direct and indirect economic activities, according to the input-output model. Inter-industry analysis was conducted using internal data of the senior internship program.

<Table 9> shows value-added induced amount for each category of industry sectors and the total value-added amount for the whole economy, by using KRW 274,499 million as the total amount of injection through senior internship program.

The final demand generated by participating seniors employed in each industry through the senior internship program was estimated by multiplying the number of participants, the average monthly wage, and 2.84, which is the average month terms of employment of the senior internship program. For each category of 18 industry sectors, we obtain value-added induced amount for each industry, summing up KRW 221,885 million as the total value-added for the injection of KRW 274,499 million.

Table 9. Value-added effect of increasing final demand by industry

(Unit: people, KRW million)

Category	No. of participants	Average monthly wage	Final demand	Value-added inducement coefficient	Value-added induced amount
Manufacturing	8,587	2.559	62,395	0.64	39,933
Transport	5,856	2.033	33,814	0.66	22,317
Accommodation & food services	2,119	1.879	11,309	0.82	9,273
Wholesale and retail	3,968	1.718	19,359	0.88	17,036
Arts/sports & leisure-related services	406	1.588	1,831	0.88	1,611
Other	2,614	1.696	12,592	0.84	10,578
Real estate and rental	693	2.255	4,438	0.96	4,260
Education services	2,548	0.826	5,976	0.93	5,558
Business facilities management and business support	10,481	2.213	65,866	0.93	61,255
Construction	2,254	2.926	18,726	0.81	15,168
Health and social care services	3,596	2.031	20,744	0.88	18,254
Associations and organizations/repair and other personal services	1,020	1.513	4,382	0.84	3,681
Professional, scientific, and technical services	662	2.347	4,431	0.86	3,810
Sewage and waste treatment/raw material recycling and environmental restoration	207	2.327	1,368	0.89	1,218
Publishing/video/broadcasting and information services	295	2.100	1,760	0.88	1,549
Electricity/gas/steam and water utilities	247	2.653	1,861	0.49	912
Agriculture/forestry and fishing	964	2.249	6,156	0.84	5,171
Finance and Insurance	51	2.140	310	0.92	285
Mining	2	2.945	17	0.88	15
Total (government's subsidy + cost payed by company)					221,885

Note: 1) Coefficients are determined based on services and other factors.

Sources: Korea Institute for Industrial Economics and Trade (2023). Key Industry Trend Indicators

The total value-added induced by the final demand generated through the entire senior internship program was estimated to be KRW 221,885 million. Of these, the effect of the government's financial injection is 42.57% since the government's wage subsidy KRW 97,073 million is 42.57% of the total injection KRW 274,499 million. Therefore, the value-added induced amount is KRW 94,457 million.

We finally estimate medical cost reduction of participants in senior internship program. Reduced healthcare expenditure as a result of improved health of participating seniors in the senior internship program, like other SESAP participants, can be calculated as another benefit. <Table 10> shows the average annual medical expenditure “per capita” in 2020 and 2021

for seniors aged 65 or over in Korea, calculated by using internal data from the National Health Insurance Service. It also lists the average annual medical expenditures of the waiting list and participants by year, calculated by using the medical expenditure data of participants who used medical care.

Table10. Annual medical expenditure “per capita” in 2020 and 2021 in Korea (seniors aged 65 and over)

(Unit: KRW million)

Category	2020 (A)	2021 (B)	Gap of average annual medical expenditure (A-B)	Gap of average monthly medical expenditure (A-B)/12
Total medical expenditure[1)] (per capita) (average)	4.959	3.045	1.914	0.159
medical expenditure of SESAP waiting people (per capita) (average) **(a)**	3.696	2.733	0.963	0.802
medical expenditure of SESAP participants (per capita) (average) **(b)**	3.581	2.028	1.553	0.129
Gap of medical expenditure (per capita) (average) **(a-b)**	0.114	0.705	-	-

Notes : 1) Total medical expenditure just shows average annual medical expenditure “per capita” in 2020 and 2021 for seniors aged 65 or over in Korea.

As of 2021, there was no statistical difference in medical expenses of SESAP participants in the previous year, with an average of KRW 0.144 million (KRW 114,403) per year, but the difference in medical expenses in the current year was very large, with an average of KRW 0.705 million (KRW 704,993) per year. As a result, it can be inferred that participation in SESAP in the current year resulted in reduced medical expenses due to improved health. Therefore, we estimate that the medical cost savings per SESAP participant was KRW 0.705 million (KRW 704,993).

Using the per capita medical cost savings of KRW 0.705 million (KRW 704,993) for seniors participating in SESAP as of 2021, the per capita medical cost savings for seniors participating in the senior internship program as of 2022 is calculated by using the average number of months of employment of 2.35, resulting in an average annual medical cost savings of KRW 0.138 million (KRW 138,061). The total healthcare cost savings for all 46,570 participants in the senior internship program as of 2022 is estimated to be KRW 6,429 million.

3.3. Cost-Benefit Analysis

From the estimates of the costs and benefits of the senior internship program, the net benefits of the senior internship program can be calculated. Specifically, two methods are commonly used: the net benefit magnitude, which is the difference between the two, and the benefit-cost ratio, which is the ratio of the two factors.

<Table 11> enumerates the costs and benefits of the senior internship program in 2022 and estimates the net benefit and benefit-cost ratio. Scenario 1 includes increased income, value-added, and increased taxes, while scenario 2 includes reduced healthcare costs in addition.

Table 11. Net social benefits of the senior internship program (2022)

(Unit: KRW million)

Category	Components of cost/benefit	Scenario 1	Scenario 2
Cost (C)	Labor cost	97,073	97,073
	Operating cost	2,827	2,827
	Total	99,900	99,900
Benefit (B)	Increased income	229,379	229,379
	Value added induced	94,457	94,457
	Medical cost reduction	-	6,429
	Increased income tax revenue	7,813	7,813
	Increased VAT	6,709	6,709
	Total	338,358	344,787
Net benefit size (B-C)		238,458	244,887
Benefit-cost ratio (B/C)		3.39	3.45

The net social benefit of the senior internship program in 2022 is estimated to be KRW 238,458 million, excluding healthcare cost savings, and KRW 244,887 million, including healthcare cost savings. The benefit-cost ratio of the senior internship program in 2022 is estimated to be 3.39, excluding medical cost savings, and 3.45, including medical cost savings.

4. Conclusion and Discussion

This study uses cost-benefit analysis to examine the economic effects of SESAP, focusing on the senior internship program. Unlike previous studies, this study is significant since it focuses on job-type SESAP to estimate its economic effects.

The cost-benefit analysis estimated the benefit-cost ratio by including the net social benefits of the investment in the senior internship program in terms of direct income support, direct and indirect income generation through employment support, direct and indirect tax revenues, value-added induced through the generation of final demand at the macroeconomic level in the supported industries, and healthcare cost savings through improved health due to participation in the program. As a result of the cost-benefit analysis, the net social benefit was estimated to be KRW 238.458 billion without including the effect of medical cost savings (Scenario 1), resulting in a benefit-cost ratio of 3.39. On the other hand, if the healthcare savings are included (Scenario 2), the net benefit is estimated to be KRW 244.887 billion, with a benefit-cost ratio of 3.45. In other words, the senior internship program generates more benefits than the financial costs and is therefore considered to have a policy and economic feasibility. In particular, the program includes the socio-economic

benefits of reducing medical expenses, making it a program with great social policy effectiveness.

Our findings are in line with previous studies that have conducted cost-benefit analyses of SESAPs. Previous studies have conducted cost-benefit analyses centered on public-type SESAPs (public service, social service), and most studies have found that the benefits of SESAPs are relatively larger than the costs. In particular, the benefit-cost ratio was relatively large in models that included the social benefits of reducing healthcare costs[1)10]. However, in this study, the benefit-cost ratio was estimated to be quite large at 3.45(the benefit-cost ratio of SESAP was 1.35 ~ 1.59), which can be explained by the fact that the calculation of the benefit-cost ratio centered on the senior internship program, which is representative of the job-type SESAP, reflected the value-added benefits related to 'employment creation' that were not covered in the previous studies, and that the wage benefits were large due to the relatively high wage level compared to public type jobs. In addition, in the case of the senior internship program, despite the high participation rate of seniors aged 60-64 at 50 %, it can be understood that the benefit-cost ratio was estimated to be large because it reflected the benefits of reducing medical expenses for participating seniors aged 65 or older. This can be seen as a limitation of this study.

The findings suggest that SESAP is effective in increasing income, improving health, and reducing socio-economic costs (including healthcare costs). Considering Korea’s situation, which is experiencing a rapidly aging population and a lack of a public old-age income security system, the SESAP is significant as a multi-player policy that can respond to the "four hardships" of old age–poverty, no one to rely on, loneliness, and illness. Given the socio-economic situation in Korea, it is difficult to expect institutional changes to create a stable foundation for old-age income security in a short period. Thus, SESAP needs to be continuously expanded and promoted as a social safety net for the elderly, and verifying the effectiveness of SESAP from various perspectives is necessary.

We hope that this study can be used as a basis for improving the effectiveness of SESAP in the future and contribute to policy improvement. However, we would like to see a more thorough policy effectiveness test, including costs, benefits, and effects that were not covered in this study. For example, a more detailed analysis of the benefits of SESAP in terms of expected employment creation, poverty reduction, and healthcare cost savings in the medium to long term would contribute to improving the policy feasibility and effectiveness of SESAP.

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