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Taxation of an IRP and Recommendations for Annuitization of Retirement Benefits

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Taxation of an IRP and Recommendations for Annuitization of Retirement Benefits

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Abstract

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Korea has implemented many tax breaks to encourage retirees to annuitize their retirement benefit received on leaving jobs. However, despite the efforts of the Korean government, the annuitization rate has been stagnant at near zero percent until today.

To find problems of current taxation to hinder annuitization, this study compares total received amount between IRP annuities and self-annuitization with post-tax lump sum benefit by income level under certain assumptions. According to the analysis of this study, the current tax system of an IRP is in effect designed to provide more incentives for annuitization to high-income people. Introduction of a "TEE" (Taxed-Exempt-Exempt) system where contributions are taxed, but returns and withdrawals are tax-free, may increase people's confidence and help increasing annuitization of retirement benefit because it is straightforward and simple in comparison with the current EET (Exempt-Exempt-Taxed) system. This study shows that total annuity payments under a TEE system would be reduced compared to those under the current EET system for higher income levels, while it would be opposite for lower income levels. It is because that the effect of tax deferral and 30 percent tax discount on annuity withdrawal under the current EET system of an IRP is significant to high earners but it is meaninglessly slight for lower income levels.

Based on the simulation-based comparison, this study recommends that a TEE system should be introduced as an alternative approach to encourage for low and middle income people to annuitize their retirement benefit and that tax advantage related to retirement benefit for high-income people must be limited to a reasonable level.

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Chapter 1. Introduction

1.1 Study Background

Korea is aging rapidly and people aged 65 or older made up 12.8 percent of the population in 2015, but the ratio will reach 42.5 percent by 2065 according to Statistics Korea. Elderly poverty (66 year-olds or more) rate of Korea was 49.6 percent in 2013 which was the highest among 34 members of the Organization for Economic Cooperation and Development according to OECD Data.[1]

As part of the three-pillar of old-age income security system, incorporating the public, corporate and personal pensions, corporate pensions need to be actively fostered. It is now over 10 years since Korea enacted the Employee Retirement Benefit Security Act (ERBSA) that introduced Defined Benefit (DB), Defined Contribution (DC), and Individual Retirement Pension (IRP) plans. ERBSA was amended significantly in 2011, and one of the changes was about an Individual Retirement Pension (IRP), formerly called Individual Retirement Account (IRA). From July 26th, 2012, a participant of DB or DC is required to transfer their benefits to an IRP on termination of the employment under the revised ERBSA, which was devised in the hope that workers would preserve and annuitize their retirement benefits for their old-age income security. Tax Changes were made to encourage for workers to annuitize their retirement benefits along with the revision of ERBSA.

However, despite the endeavors of Korean government, annuitization rate has been near zero percent until today.

According to the official data from Financial Service Supervisory (FSS), in 2016, only 3,766 accounts (1.6%) among 240,718 IRP accounts that have retirement benefits received from employers and are qualified for annuitization, chose to be paid in

[1] The second highest country was Israel whose poverty rate for the elderly was 24.1%.

annuity.

The accumulated amount of accounts that chose to be paid in annuity was 1,170 billion won (20.3%) of the total accumulated amount of IRP accounts which were qualified for annuitization with retirement benefit received from employers.

Average accumulation of IRP accounts paid in lump sum was 19 million won, while average balance of IRP accounts paid in annuity was 310 million won.

[Table 1. Withdrawal of IRP accounts according to Pay-Out Option in 2016]

(100 million won)

Annuity		Lump sum		Total	
Number of Accounts	Amount	Number of Accounts	Amount	Number of Account	Amount
3,766(1.6%)	11,701(20.3%)	236,952(98.4%)	45,916(79.7%)	240,718(100.0%)	57,617(100.0%)

Source: Corporate Pension Report 2016 published by FSS

1.2 Purpose of Research

This study aims to answer three research questions.

First, how efficient are the tax incentives under the current tax system in promoting annuitization of retirement benefits?

Second, are there any alternative approaches to encourage annuitization of retirement benefit that may be more efficient?

Third, what would be the effect of the tax advantages according to income levels under the new tax regime (recommended by this study)?

In examining these issues, it is important to remind the purpose of retirement benefit plans. Their purpose is to ensure for people to maintain a reasonable living standard for the remaining life after retirement. Tax advantages of a retirement benefit plan is not intended to help those who are more fortunate with substantial assets to accumulate more assets or to leave more wealth to their heirs.

This study focuses on the decumulation stage rather than on the accumulation stage of an IRP in terms of tax incentives.

Chapter 2. Tax Treatment of an IRP and Literature Review

2.1 Types of Retirement Benefit Plans

In December 2005, the Employee Retirement Benefit Security Act (ERBSA) created a framework for the corporate pension system in Korea that aimed to switch the traditional Severance Pay Schemes (SPS) to the corporate pensions. Based on the ERBSA, employers set up the corporate pension plans on a voluntary basis that should be funded and managed under either insurance or trust arrangements. Currently, the SPS and corporate pensions exist alongside each other under ERBSA.

2.1.1 Defined Benefit (DB) Plans

Under DB plans, employees who have completed one year of continuous employment are entitled to benefits equal to one month's pay or more for every full year of employment, calculated on their final three monthly salaries[2]. Employers pay benefits in the form of a lump-sum only and don't have any burden to pay annuities unlike under the conventional DB systems where employers bear employees' longevity risks. Hence, annuitization depends entirely on the employees who receive lump-sum benefit in their IRP.

2.1.2 Defined Contribution (DC) Plans

Employers who set up a DC plan must contribute minimum contributions equal to one-twelfth of the annual wages while

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[2] Article 2 of Employee Retirement Benefit Security Act

employees can make a voluntary contribution[3]. The retirement benefit under a DC plan is variable depending on the investment performance unlike under a DB plan. An employee under a DC plan must transfer his/her benefit to an IRP on termination of the employment.

2.1.3 The Severance Pay Schemes

The SPS is a mandatory retirement scheme for private sector employees unless an employer sets up a corporate pension plan such as a DB or a DC plan. Employees are entitled to severance pay after one year of continuous employment[4]. The SPS is largely unfunded and book-reserved, as advance funding is not required. Benefits are paid out in the form of lump sums, but annuitization is possible by transferring the benefits into an IRP. The SPS is basically the same as DB in nature but mandatory funding.

2.1.4 Individual Retirement Pension (IRP)

IRP is "a sort of transitional or terminal savings account, detached from any specific employer's plan"[5], for a worker who could deposit his/her lump-sum benefits from his/her last employer's SPS, DB or DC plan, with additional contributions being allowed. From July 26th, 2012, a participant of a DB or DC plan can set up an IRP to make voluntary contributions and must transfer their benefits to an IRP on termination of the employment. Based on the recent revision of Enforcement Decree of ERBSA, anyone who has income earned from working including self-employment can set up an IRP to make voluntary contributions as well as to transfer their retirement benefit from July 26th, 2017.

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[3] Article 2 of Employee Retirement Benefit Security Act
[4] Article 8 of Employee Retirement Benefit Security Act
[5] Quoted from The Aging of Korea: Hanam Phang, Korea's New Corporate Pension System: Progress and Next Step Challenges and Choices for Tomorrow, March 22, 2007

2.2 Taxation of an IRP

2.2.1 Overview of Individual Income Tax System.

"Under Korean individual income tax codes, individual income is subject to comprehensive and schedular taxation. Under comprehensive taxation, wages and salaries, business income, pension income, and other income are aggregated and taxed progressively. A combined income of dividend and interest exceeding 20 million won is subject to comprehensive taxation. Currently, interest and dividends are subject to withholding tax of 14 percent. Under schedular taxation (non-comprehensive taxation), capital gains and retirement income are separately taxed at varying tax rates"[6].

Currently, the tax rates on individual income range from 6% to 40% before applying the local income tax (10% of income tax).

[Table 2. Basic Individual Income Tax Rates]

Tax Base	Tax Rate
12 million won or less	6%
12 ~ 46 million won	15%
46 ~ 88 million won	24%
88 ~ 150 million won	35%
150 ~ 500 million won	38%
Over 500 million won	40%

2.2.2 Tax Regime and Contribution Limit of an IRP

In Korea, most pension plans including an IRP basically follow an "Exempt-Exempt-Taxed" (EET) regime where contributions

[6] Excerpted from A guide to Korea taxation 2016 published by Ministry of Strategy and Finance

and investment returns are not taxed until they are withdrawn[7].

The limit of voluntary contributions to an individual's retirement and personal pensions is total KRW 18 million[8] per year, while there is no limit to the contributions of lump-sum benefits received from employers. A DB or DC plan benefit must be transferred without any income tax deduction into an IRP on the termination of the employment. Meanwhile, all or partial amount of SPS benefit may be transferred into an IRP on an employee's request.

Tax treatments on IRP withdrawals vary according to the source of the income and the pay-out option. For tax calculation, distribution from IRP is withdrawn in the order of following:

① non tax- credited voluntary contributions

② deferred retirement benefit received from employers

③ investment return and tax-credited voluntary contributions

2.2.3 Taxes on Non-Annuity Withdrawals[9]

Non-annuity withdrawal is subject to retirement income tax on retirement benefits received from employers (Hereinafter, "retirement income" means "Retirement benefit received in lump sum from employers") or other income tax on investment return [10] and voluntary contribution.

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[7] A variant of the EET regime is applied to voluntary employee contribution in that voluntary employee contribution is made on after-tax basis and partially tax-exempt in form of tax credit

[8] Tax credit on voluntary contribution depends on the amount contributed and directly reduces the amount of tax due. Tax credit limit is [contribution up to 7 million won x 12% or 15% depending on the level of income]

[9] Non-annuity withdrawal means a withdrawal that is not qualified to be treated as annuity withdrawal under the related tax rules. Non-annuity withdrawal includes lump-sum (single payment) withdrawal, withdrawal over annual annuity limit, etc.

[10] Investment return includes interest, dividend and capital gains. Certain kind of capital gains from securities are generally tax- exempt in individual income taxation but always taxed in an IRP on withdrawal.

[Table 3. Tax Treatment on Lump−Sum Withdrawals of IRP]

Source	Types of taxes	Withholding tax	Taxation method
Retirement income[11]	Deferred Retirement Income tax	Determined and fixed on termination of employment (variable depending service years and amount)	Schedular taxation (non−comprehensive taxation)
Investment Return and Voluntary Contribution	Other income tax	Flat rate 15% (16.5% including local income tax)	Separate taxation (no further tax liability other than withholding tax)

(1) Retirement income tax

Lump−sum benefit received upon leaving a company is included in an individual's taxable income but is taxed separately. Deferred retirement income tax is fixed on termination of employment, not subject to change of tax revision[12]. Retirement income tax is calculated according to the following formula

[11] In case of DC plans, [employer contribution and investment return from employer contribution by the time of employment termination] is treated "retirement income". Accordingly, deferred retirement income tax from a DC plan is calculated based on [employer contribution and investment return from employer contribution by the time of employment termination].

[12] For example, the amount of deferred retirement income tax would be the same even when the retirement benefits received from employers were withdrawn in 70 years.

[Table 4. Calculation of Retirement Income Tax[13]]

<table>
<tr><th></th><th>formula</th></tr>
<tr><td>1. retirement income</td><td>Retirement benefit in lump−sum from employers</td></tr>
<tr><td>2. deduction on length of service</td><td><table>
<tr><td>Length of service</td><td>Deductions</td></tr>
<tr><td>5 years or less</td><td>300,000 won x service year</td></tr>
<tr><td>5 ~ 10 years</td><td>1.5 million won + 500,000 won x (service year − 5)</td></tr>
<tr><td>10 ~ 20 years</td><td>4 million won + 800,000 won x (service year − 10)</td></tr>
<tr><td>Over 20 years</td><td>12 million won + 1,200,000 won x (service year − 20)</td></tr>
</table></td></tr>
<tr><td>3. 1−2</td><td>Retirement income − length of service</td></tr>
<tr><td>4. converted benefit</td><td>(Retirement income − length of service)/service year X 12</td></tr>
<tr><td>5. deductions on converted benefit</td><td><table>
<tr><th>Converted benefit</th><th>Deductions on converted benefit</th></tr>
<tr><td>8 million won or less</td><td>100%</td></tr>
<tr><td>8 million ~70 million won</td><td>8 million won + (60% of the excess amount over 8 million won)</td></tr>
<tr><td>70 million ~100 million won</td><td>45.2 million won + (55% of the excess amount over 70 million won)</td></tr>
<tr><td>100 million ~300 million won</td><td>61.7 million won + (45% of the excess amount over 100 million won)</td></tr>
<tr><td>Over 300 million won</td><td>151.7 million won + (35% of the excess amount over 300 million won)</td></tr>
</table></td></tr>
<tr><td>6. annualized taxable income</td><td>Converted benefit − deduction on converted benefit (4 − 5)</td></tr>
<tr><td>7. annualized tax</td><td>Annualized taxable income (6) x basic income tax rates (6~40%)[14]</td></tr>
<tr><td>8. retirement income tax</td><td>Annualized tax(7) X service year/12</td></tr>
</table>

13 The recent change on retirement income tax calculation has been applied on a gradual basis over the next five years after this change took effect in 2016. Accordingly, the revised retirement income tax will be 100% applied in 2020.

14 Tax rates on retirement income are the same as those applied to comprehensive income.

[Table 5. Illustrative Example – Retirement Income Tax Depending on Amount and Service Years[15]]

(Unit: won)

amount \ service year	1Y	5Y	10Y	20Y	30Y	40Y
10,000,000	562,540	136,400	–	–	–	–
30,000,000	4,664,440	1,166,000	510,400	123,200	95,040	–
50,000,000	10,098,440	2,812,700	1,606,000	651,200	158,400	–
100,000,000	24,106,866	11,349,250	5,480,200	2,948,000	1,478,400	985,600
200,000,000	52,706,866	36,907,200	22,486,750	10,488,500	7,334,250	5,104,000
300,000,000	81,306,866	64,077,200	46,372,700	24,899,600	15,188,250	11,957,000
500,000,000	138,506,866	120,534,330	100,712,700	65,301,500	43,744,250	33,536,800
1,000,000,000	281,506,866	263,534,330	240,782,660	200,338,600	163,027,700	128,062,000
2,000,000,000	567,506,866	549,534,330	526,782,660	480,421,330	434,727,700	397,416,800
3,000,000,000	853,506,866	835,534,330	812,782,660	766,421,330	718,916,000	671,410,660

[Table 6. Illustrative Example – Effective Tax Rates Depending on Amount and Service Years[16]]

(Unit: %)

amount (won) \ Service year	1Y	5Y	10Y	20Y	30Y	40Y
10,000,000	5.6	1.4	0.0	0.0	0.0	0.0
30,000,000	15.5	3.9	1.7	0.4	0.3	0.0
50,000,000	20.2	5.6	3.2	1.3	0.3	0.0
100,000,000	24.1	11.3	5.5	2.9	1.5	1.0
200,000,000	26.4	18.5	11.2	5.2	3.7	2.6
300,000,000	27.1	21.4	15.5	8.3	5.1	4.0
500,000,000	27.7	24.1	20.1	13.1	8.7	6.7
1,000,000,000	28.2	26.4	24.1	20.0	16.3	12.8
2,000,000,000	28.4	27.5	26.3	24.0	21.7	19.9
3,000,000,000	28.5	27.9	27.1	25.5	24.0	22.4

15 Revised retirement income tax is 100% applied, including local income tax

16 Effective tax rates = (retirement income tax)/(retirement benefit), including local income tax

(2) Taxation on other income from an IRP

Voluntary contribution[17] and investment return in an IRP are classified as other income and taxed separately unlike general individual income taxation. Certain kinds of capital gains from securities are generally tax– free under general individual income taxation but always taxed in an IRP upon withdrawal. [18]

2.2.4 Taxes on Annuity Withdrawals from an IRP

Annuity withdrawal is subject to pension income tax but the pension income tax calculation is different depending on the source. To encourage retirement income to be paid in annuity instead of lump sum, taxes owed for receiving an annuity is reduced by 30 percent compared with taxes owed for receiving lump sum from 2015. Meanwhile, separate tax rates are applied to voluntary contributions and investment returns of 12 million won or less to promote the private pension system from 2013.

[Table 7. Tax Treatment on Annuity Withdrawal of IRP]

Source	Tax	Withholding	Taxation method
Retirement benefit received from employers	Pension income tax	Deferred retirement income tax X 70%	Separate taxation
Investment return and voluntary contribution		3.3% ~ 5.5% including local income tax(refer to table below)	Comprehensive taxation[19] (conditional separate taxation)

[17] Non tax-credited voluntary contribution is not taxable
[18] For example, capital gain from trading of domestically listed stocks is generally tax-free but taxable in an IRP.
[19] If the amount is 12 million or less including annuities from tax-qualified personal pensions, the taxpayer can choose separate taxation(taxed at flat tax rates).

[Table 8. Withholding Tax Rates on Voluntary and Investment Return]

Category	Withholding pension income tax rate	
Age	~70	5.5%
	70~ 80	4.4%
	Over 80	3.3%
Life time annuity	4.4%	

(1) Requirement to Be Treated as an Annuity

Pension income tax is applied upon withdrawal satisfying all the following requirementsⓐ~ⓒ[20] and withdrawal due to an inevitable cause[21] such as death or medical care.

ⓐ An IRP holder must, after he/she reaches age 55 or older, file his/her application for annuity withdrawal

ⓑ An IRP holder must withdraw money after five years from the date of his/her set-up of the account. However, an account with deferred retirement income received from an employer is exempt from this condition.

ⓒ An IRP holder must withdraw money within the limit of the amount calculated in accordance with the following formula (hereinafter referred to as “annual distribution limit”). In such cases, no withdrawal for medical care shall be included in the amount withdrawn amount.

$$\text{Annual distribution limit} = \frac{\text{Balance of IRP}}{(11 - \text{number of years passed from the date when an IRP owner could apply for annuity}^{22})} \times 120\%$$

[20] Prescribed in Article of 40-2 Enforcement Decree of the Income Tax Act
[21] Prescribed in Article 20- 2 of Enforcement Decree of the Income Tax Act. Withdrawal due to inevitable causes or medical care is always separately taxed as withholding tax rates without aggregation
[22] Prescribed in Article of 40-2 Enforcement Decree of the Income Tax Act “Number of years passed from the date when an IRP owner could apply for

The amount exceeding the annual distribution limit is treated as non−annuity withdrawal, which is subject to retirement income tax or other income tax according to the source. As the formula indicates, the minimum required period for tax treatment as annuity withdrawal is basically 10 years. However, even lump−sum payment on termination of an IRP immediately after application for annuity withdrawal, could be treated as annuity withdrawal as long as ten years passed from the date when an IRP owner could have applied for annuity withdrawal.

(2) Comprehensive Taxation of Annuity

Annuity withdrawal is subject to comprehensive taxation when the source is either voluntary contribution or investment return. The deductions from pension income under comprehensive taxation are shown in the table below and the deduction ceiling is nine million won.

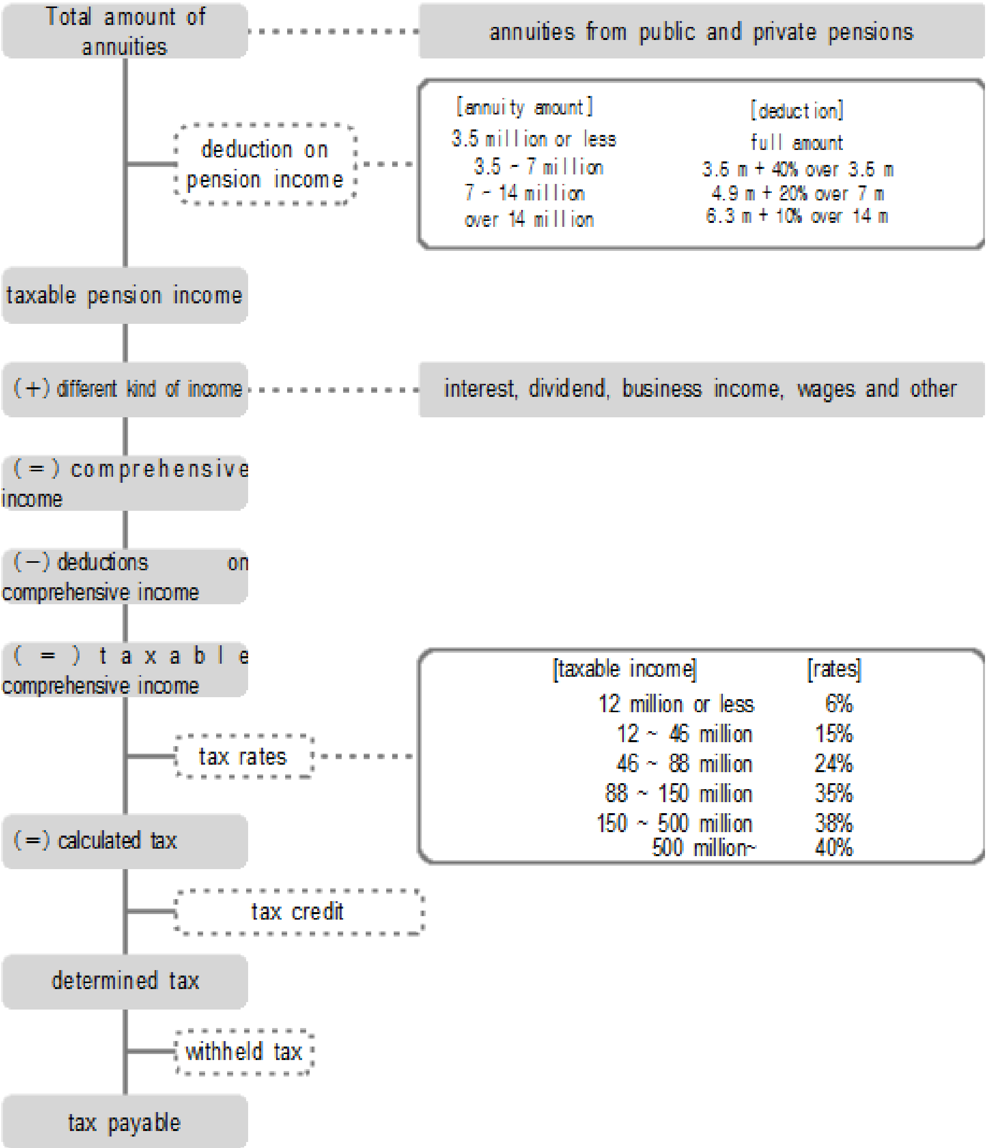
[Table 9. Deduction from Annuity Amount]

Annuity amount	Deductions
3.5 million won or less	Full amount
3.5 − 7 million won	3.5 million won + 40% of annuity exceeding 3.5 million won
7 − 14 million won	4.9 million won + 20% of annuity exceeding 7 million won
Over 14 million won	6.3 million won + 10% of annuity exceeding 14 million won

annuity" in the formula means the number of years aggregated from the year when the IRP owner could withdraw an annuity if he/she wanted. The annual limit is not applied in 10 years.
If an IRP is in any of the following cases, the date when an IRP owner could apply for annuity shall be as follows:
① In cases where an IRP account was set up before March 1, 2013: Sixth year
② In cases of succession of an IRP account by his/her spouse: Number of years of the original IRP owner as at the date of his/her death.

To avoid comprehensive taxation, various methods such as adjustment of annuity amount, termination and suspension are available under the current tax system.

[Fig 1. Comprehensive Taxation of Pension Income]



Source : Nation Tax Service

The following table shows calculated tax under comprehensive taxation under the assumption that there is no other comprehensive income and no deduction other than deduction on pension income.

[Table 10. Income Tax on Annuities under Comprehensive Taxation]

Annual annuity amount(A)	Tax (B)	B/A
7,000,000	39,600	0.6%
10,000,000	198,000	2.0%
12,000,000	303,600	2.5%
15,000,000	468,600	3.1%
18,000,000	646,800	3.6%
20,000,000	765,600	3.8%
25,000,000	1,468,500	5.9%
30,000,000	2,211,000	7.4%
40,000,000	3,696,000	9.2%
50,000,000	5,329,500	10.7%
100,000,000	18,067,500	18.1%

Note) assumed that there is no different kinds of income subject to comprehensive taxation

2.3 Literature Review

2.3.1 Previous Studies.

Most literatures relating to taxation of retirement benefit focused on economic effects of tax incentives during saving stage than during payout stage until recently. Previous studies regarding taxation of retirement benefit had mainly analyzed tax differences between lump-sum and annuity and had proposed that tax treatment of annuity should be designed to be favorable to lump sum until the tax revision in 2014.

YongJin Kim(2014) analyzed Korean pension income taxation for income security of old aging population and proposed that in order to prevent high-income earners from getting excessive tax benefits, the limit of contributions of personal pension saving should be maintained 4,000,000 won , allowing additional tax credits for employee contributions on corporate pensions and setting up the upper limitation of contributions in accordance with income level. His study examined and compared the differences in tax benefits which were likely to change according to the choice of employees.

Seong-hoon Moon and Dong-won Lim (2014) suggested that introduction of a TEE system should promote private pensions by diversifying choices for workers to choose their best option for them. Soo Jean Park (2016) addressed that if individuals were given the choices of taxation of private pensions either the EET system or a TEE[23] system within the annual contribution limit of KRW 18 million, they would be able to accumulate financial resources to prepare for their old age depending on their situation.

Wonsuk Chung and Sung Ho Kang (2017) estimated the effect of extending tax deferral limit for private pension from 4 million KRW to 7million KRW in 2015 by income level. To estimate the effect, first they empirically analyzed the elasticity of pension contribution of changing tax deferral limit in 2011. In the analysis they found that high income group sensitively reacted to the tax deferral limit change and increased private pension contribution, while mid and low income groups did not change their private pension contribution. Based on the empirical analysis they estimated that because of increasing tax deferral limit, high and mid income groups would increase private pension contribution about 3% and 1% for each but the change would not increase low income group private pension. Their study showed that pension contribution elasticities of changing tax limit were different for income levels.

The tax revision in 2014, effective from 2015 was that taxes owed for receiving retirement benefit in annuity would be lowered by 30 percent compared with taxes owed for receiving retirement benefit in lump sum to encourage workers to choose to be paid in annuity.

Since the tax revision in 2014, there has been very few studies on tax treatment during the payout stage of retirement benefits.

[23] Taxed- Exempt – Exempt system, where contributions were taxed, but returns and withdrawals were tax free.

Seungryul Ma and Jeongju Kim(2015) compared IRP with Single Premium Immediate Annuity(SPIA) to confirm the effect of 2014 tax revision on retirement benefit annuitization. The study showed that IRP holders could receive less monthly payments compared to lifetime immediate annuity bought with after tax lump sum and analyzed the difference was mainly caused by the fact that interest rates for SPIA was much higher than those for IRP. Meanwhile according to their analysis, IRP holders could receive more monthly payments compared to term-certain immediate annuities bought with after tax lump sum despite the interest rate differences between an IRP and a SPIA. It is likely that the study overlooked the effect from the fundamentally different tax treatment on gain from life annuities (total annuities – paid premium) between an IRP and non-IRP products, which could be an important cause of the result of the study. Under the individual income taxation, gain from saving insurance is generally classified as interest but gain from life annuities is not taxed to encourage for individuals to be prepared for their longevity risks. However, gain from life annuities received in an IRP is treated as taxable income and is subject to pension income tax, which is one of the critical tax disadvantages against an IRP.

When a retiree has to decide on annuitization of retirement benefit, the benchmark tends to be total received amount from self-annuitization (based on after tax lump sum and total investment returns).

This study will examine the extent of favorable tax treatment to time certain annuities compared to lump sum by amount of retirement benefit received from employers regardless of type of retirement plan. The reason this study excludes life annuities in the analysis is that it is not rational to buy a life annuity through an IRP despite the tax disadvantage mentioned above[24].

[24] Life annuities can be sold by only life insurance companies among IRP providers. Market share of life insurance companies in an IRP market is 13.5 percent at the end of 2016 according to FSS data.

[Table 11. Comparison of Annuity Contracts by IRP Providers]

	Bank	Financial Investment	Non−life Insurance	Life Insurance
Contract type	·Term certain annuity(5~50years)			·Term certain annuity ·Life annuity
Who direct investment?	IRP owner		Insurance company	
Line−up of investment products	·Principal and interest guaranteed products ·Investment funds		·Principal and interest guaranteed products	
Suspension of annuity	Practicable		Not practicable	
Change of annuity period or payment amount	Practicable		Not practicable	

Chapter 3. Assumptions and Research Design

This chapter assesses the effect of the tax advantage of different levels of income under the current tax system (EET) and the recommended tax system in this study (TEE).

3.1 Assumptions

This study analyzes the extent of tax incentive for annuitization of retirement benefit by income level under the current tax regime (EET) to recommend measures to promote more annuitization of those who need old-age income security.

To this end, the three analyses and the assumptions are as follows:

[Analysis 1] Present value (PV) of total distribution from self annuitization with after tax lump sum vs. PV of annuities of IRP under the current tax regime (EET)

[Analysis 2] PV of annuities of IRP under the current tax regime (EET) vs. PV of annuities of IRP under the hypothetical tax regime (TEE)

[Analysis 3] PV of total taxes on annuities of IRP under the current tax regime (EET) vs. PV of total taxes on annuities of IRP under the hypothetical tax regime (TEE)

[Common assumptions]

1. A worker retires at the age of 60 with a lump sum retirement benefit for 30 years' service
2. Lump sum retirements for analyses are as follows:[25]

(million won)

[25] Average retirement benefit of employees(excluding executives) for 30 years' service is approximately 112 million won based on employment report (2015) published by Ministry of Employment and Labor.

	1	2	3	4	5	6	7	8
amount	40	60	80	100	200	300	500	1,000

3. Revised retirement income tax calculation is 100% applied.
4. Cash flow occurs at the beginning of the year.
5. Discount rate to calculate present value is 3% that is set equal to the rate of investment return of IRP. Sensitivity test is used to mitigate parameter risks in each analysis.
6. A retiree has a dependent and either a retiree or his/her dependent is over 70.

[Assumptions for annuities in an IRP under the EET tax regime]

1. Payment of 25 year fixed period annuity begins right after retirement benefit is transferred to an IRP
2. The rate of investment return during annuity period is 3% excluding fees on IRP of 0.5%.
3. Annuity is received at the beginning of every year.
4. An IRP has no voluntary contribution.
5. Annuity from investment return of 12 million won or less is separately taxed.
6. When private pension income is subject to a comprehensive taxation, other comprehensive income to be aggregated is only public pension income of 2,285,545 won, taxable public pension income[26] of top 10 % according to 2015 data of National Tax Service.

[Assumptions for self– annuitization with after tax lump sum]

1. The same pre–tax withdrawals as IRP annuities are made at the beginning of every year for comparison.
2. The rate of investment return during self– annuitization period is 3.5% that is taxed as interest or dividend income.

[26] According to Article 20–3 of Income Tax Act, public pensions (national pension, government employee pensions, etc.) are taxable on the benefit received based on contributions paid from January 1, 2002

3. When interest and dividend income is subject to comprehensive taxation, other comprehensive income to be aggregated is only public pension income[27] of 2,285,545 won, taxable public pension income of top 10 % according to 2015 data of National Tax Service.

[Assumptions for annuities in an IRP under a TEE tax regime]

1. When post−tax lump sum benefit is transferred to an IRP under a "TEE" system where contributions are taxed, but returns and withdrawals are tax free, the retirement income tax on the lump sum benefit is applied without 30% tax discount that is tax incentive to encourage annuitization under the current EET system.
2. The rate of investment return during annuity period is 3% excluding fees on IRP of 0.5%.
3. Annuity is received at the beginning of every year.
4. An IRP has no voluntary contribution.

3.2 Analysis Model

3.2.1 Annuity from an IRP under the EET Tax Regime

Total Annuity Present Value (APV(A)) received at the beginning of every year for 25 years in this analysis under the EET system (the current tax system) is expressed as follows:

$$APV(A) = \sum_{t=0}^{24} \frac{A}{(1+i)^t}$$

After tax annuity under EET system (A) in this analysis is calculated as follows:

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[27] Public pension income received based on the contribution paid before 2002 is not taxable.

$$A = \left[\frac{R}{\sum_{t=0}^{24} (1+r)^{-t}} \right] - P_{tax}$$

A : an annual Annuity payment under EET system

i : interest rate to calculate present value

r : rate of investment return on IRP

R : lump sum retirement benefit

P_{tax} : tax on annuity

3.2.2 Annuities in an IRP under TEE Tax Regime

Total Annuity Present Value (APV(B)) received at the beginning of every year for 25 years under the TEE system (hypothetical tax system) is expressed as follows:

$$APV(B) = \sum_{t=0}^{24} \frac{B}{(1+i)^t}$$

Annuity under a TEE system (B) is calculated as follows:

$$B = \frac{R - R_{tax}}{\sum_{t=0}^{24} (1+r)^{-t}}$$

B : an annual Annuity payment under a TEE system

i : interest rate to calculate present value

r : rate of investment return on IRP

R : lump sum retirement benefit

R_{tax} : retirement income tax on lump sum benefit

Chapter 4. Research Findings

4.1 Analysis 1: Self -Annuitization with After-Tax Lump Sum VS. IRP Annuity under the EET System

As the table below shows, the higher the income level of a retiree is, the stronger the incentive for annuitization is. It is because that tax deferral effect and tax discount by 30% for annuity withdrawals in an IRP increase as a deferred retirement income tax is larger.

[Table 12. PV of Total Distribution from Self Annuitization with After Tax Lump Sum VS. PV of Annuities of IRP under the Current Tax Regime (EET)]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	A. (EET) PV of IRP Annuity	B. PV of Self annuitization with post- tax lump sum	A/B
1	40,000,000	-	39,690,355	39,842,272	**99.6%**
2	60,000,000	422,400	59,302,637	59,344,829	**99.9%**
3	80,000,000	950,400	78,856,695	78,742,743	**100.1%**
4	100,000,000	1,478,400	98,410,753	98,140,656	**100.3%**
5	200,000,000	7,334,250	194,407,944	191,942,494	**101.3%**
6	300,000,000	15,188,250	289,800,116	283,763,177	**102.1%**
7	500,000,000	43,744,250	469,483,814	454,660,225	**103.3%**
8	1,000,000,000	163,027,700	887,408,926	834,352,775	**106.4%**

[Table 13. Illustrative Example of Calculation of PV of Annuities of IRP under the Current Tax Regime (EET) – Case where Deferred Retirement Benefit Received from an Employer is 100 Million Won]

Year	Age	Annual annuity	source		tax	after tax income	PV	
			deferred retirement income (employer contribution)	investment return			tax	after tax income
1	60	5,575,521	5,575,521	-	57,700	5,517,822	57,700	5,517,822
2	61	5,575,521	5,575,521	-	57,700	5,517,822	56,019	5,357,108
3	62	5,575,521	5,575,521	-	57,700	5,517,822	54,388	5,201,076

4	63	5,575,521	5,575,521	–	57,700	5,517,822	52,804	5,049,588
5	64	5,575,521	5,575,521	–	57,700	5,517,822	51,266	4,902,513
6	65	5,575,521	5,575,521	–	57,700	5,517,822	49,772	4,759,721
7	66	5,575,521	5,575,521	–	57,700	5,517,822	48,323	4,621,089
8	67	5,575,521	5,575,521	–	57,700	5,517,822	46,915	4,486,494
9	68	5,575,521	5,575,521	–	57,700	5,517,822	45,549	4,355,819
10	69	5,575,521	5,575,521	–	57,700	5,517,822	44,222	4,228,951
11	70	5,575,521	5,575,521	–	57,700	5,517,822	42,934	4,105,777
12	71	5,575,521	5,575,521	–	57,700	5,517,822	41,684	3,986,192
13	72	5,575,521	5,575,521	–	57,700	5,517,822	40,470	3,870,089
14	73	5,575,521	5,575,521	–	57,700	5,517,822	39,291	3,757,368
15	74	5,575,521	5,575,521	–	57,700	5,517,822	38,146	3,647,930
16	75	5,575,521	5,575,521	–	57,700	5,517,822	37,035	3,541,680
17	76	5,575,521	5,575,521	–	57,700	5,517,822	35,957	3,438,524
18	77	5,575,521	5,216,135	359,386	69,794	5,505,728	42,226	3,331,056
19	78	5,575,521	–	5,575,521	245,323	5,330,199	144,101	3,130,930
20	79	5,575,521	–	5,575,521	245,323	5,330,199	139,904	3,039,738
21	80	5,575,521	–	5,575,521	183,992	5,391,529	101,872	2,985,159
22	81	5,575,521	–	5,575,521	183,992	5,391,529	98,905	2,898,213
23	82	5,575,521	–	5,575,521	183,992	5,391,529	96,024	2,813,799
24	83	5,575,521	–	5,575,521	183,992	5,391,529	93,227	2,731,843
25	84	5,575,521	–	5,575,521	183,992	5,391,529	90,512	2,652,275
total		139,388,037	100,000,000	39,388,037	2,461,300	136,926,737	1,589,247	98,410,753

[Table 14. Illustrative Example of Calculation of PV of Self Annuitization with Post Tax Lump Sum – Case Retirement Benefit Received from an Employer is 100 Million Won]

Year	Age	Beginning Balance	Annual withdrawal	Investment return	tax	Ending balance	PV	
							Tax	Cash inflow after tax
1	60	98,521,600	5,575,521	3,253,113	500,979	95,698,212	500,979	5,575,521
2	61	95,698,212	5,575,521	3,154,294	485,761	92,791,223	471,613	5,413,128
3	62	92,791,223	5,575,521	3,052,550	470,093	89,798,159	443,107	5,255,464

4	63	89,798,159	5,575,521	2,947,792	453,960	86,716,470	415,438	5,102,392
5	64	86,716,470	5,575,521	2,839,933	437,350	83,543,532	388,580	4,953,779
6	65	83,543,532	5,575,521	2,728,880	420,248	80,276,643	362,509	4,809,494
7	66	80,276,643	5,575,521	2,614,539	402,639	76,913,022	337,204	4,669,411
8	67	76,913,022	5,575,521	2,496,813	384,509	73,449,804	312,641	4,533,409
9	68	73,449,804	5,575,521	2,375,600	365,842	69,884,040	288,799	4,401,368
10	69	69,884,040	5,575,521	2,250,798	346,623	66,212,693	265,658	4,273,173
11	70	66,212,693	5,575,521	2,122,301	326,834	62,432,639	243,195	4,148,712
12	71	62,432,639	5,575,521	1,989,999	306,460	58,540,656	221,393	4,027,875
13	72	58,540,656	5,575,521	1,853,780	285,482	54,533,433	200,231	3,910,559
14	73	54,533,433	5,575,521	1,713,527	263,883	50,407,555	179,692	3,796,659
15	74	50,407,555	5,575,521	1,569,121	241,645	46,159,510	159,756	3,686,077
16	75	46,159,510	5,575,521	1,420,440	218,748	41,785,680	140,406	3,578,715
17	76	41,785,680	5,575,521	1,267,356	195,173	37,282,342	121,625	3,474,481
18	77	37,282,342	5,575,521	1,109,739	170,900	32,645,659	103,397	3,373,282
19	78	32,645,659	5,575,521	947,455	145,908	27,871,685	85,706	3,275,031
20	79	27,871,685	5,575,521	780,366	120,176	22,956,352	68,535	3,179,642
21	80	22,956,352	5,575,521	608,329	93,683	17,895,477	51,870	3,087,031
22	81	17,895,477	5,575,521	431,198	66,405	12,684,750	35,696	2,997,118
23	82	12,684,750	5,575,521	248,823	38,319	7,319,733	19,998	2,909,823
24	83	7,319,733	5,575,521	61,047	9,401	1,795,857	4,764	2,825,071
25	84	1,795,857	1,795,857	–	–	–	–	883,443
Total			135,608,372	43,837,792	6,751,020		5,422,791	98,140,656

The sensitivity analysis below assumed that the discount rate is 1% and the rate of investment return is 1.5% for self annuitization, 1% for IRP.

[Table 15. Sensitivity Analysis–Discount Rate: 1%/Investment Return: 1%(1.5% for Self Annuitization)]

Classification	Lump sum benefit(pre–tax)	Retirement income tax	A. (EET) PV of IRP Annuity	B. PV of Self annuitization with post– tax lump sum	A/B
1	40,000,000	–	39,869,986	41,274,990	96.6%
2	60,000,000	422,400	59,538,423	61,462,242	96.9%
3	80,000,000	950,400	79,140,219	81,536,933	97.1%
4	100,000,000	1,478,400	98,742,016	101,611,624	97.2%
5	200,000,000	7,334,250	194,721,629	198,557,248	98.1%
6	300,000,000	15,188,250	289,671,873	293,373,009	98.7%
7	500,000,000	43,744,250	470,532,729	469,344,121	100.3%
8	1,000,000,000	163,027,700	888,341,101	858,661,404	103.5%

The sensitivity analysis below assumed that the discount rate is 5% and the rate of investment return is 5.5% for self annuitization, 5% for IRP

[Table 16. Sensitivity Analysis–Discount Rate: 5%/Investment Return: 5%(5.5% for Self Annuitization)]

Classification	Lump sum benefit(pre–tax)	Retirement income tax	A. (EET) PV of IRP Annuity	B. PV of Self annuitization with post– tax lump sum	A/B
1	40,000,000	–	39,575,020	38,805,406	102.0%
2	60,000,000	422,400	59,146,804	57,816,675	102.3%
3	80,000,000	950,400	78,664,658	76,730,086	102.5%
4	100,000,000	1,478,400	98,182,511	95,643,293	102.7%
5	200,000,000	7,334,250	195,022,730	187,216,594	104.2%
6	300,000,000	15,188,250	289,515,140	276,921,305	104.5%
7	500,000,000	43,744,250	467,644,835	444,307,859	105.3%
8	1,000,000,000	163,027,700	881,620,548	817,524,568	107.8%

4.2 Analysis 2: Annuities of an IRP under the Current Tax Regime (EET) VS. Annuities of an IRP under a New Tax Regime (TEE)

The table below shows, PV of total annuities under a TEE system is reduced compared to those under the current EET system for higher income level, while it is the opposite for lower income level. It is because that the effect of tax deferral and 30% tax discount on annuity withdrawal in IRP under the current EET system is significant to high earners but it is meaninglessly slight for lower income level.

[Table 17. PV of Annuities of IRP under the Current Tax Regime(EET) VS. PV of Annuities of IRP under the Hypothetical Tax Regime(TEE)]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	A. (EET) IRP Annuity	B. (TEE) IRP Annuity	B/A
1	40,000,000	-	39,690,355	40,000,000	**100.8%**
2	60,000,000	422,400	59,302,637	59,577,600	**100.5%**
3	80,000,000	950,400	78,856,695	79,049,600	**100.2%**
4	100,000,000	1,478,400	98,410,753	98,521,600	**100.1%**
5	200,000,000	7,334,250	194,407,944	192,665,750	**99.1%**
6	300,000,000	15,188,250	289,800,116	284,811,750	**98.3%**
7	500,000,000	43,744,250	469,483,814	456,255,750	**97.2%**
8	1,000,000,000	163,027,700	887,408,926	836,972,300	**94.3%**

Note: Neutral amount is 120 million won where there is no difference of PV of total annuities between under the current EET and under the TEE

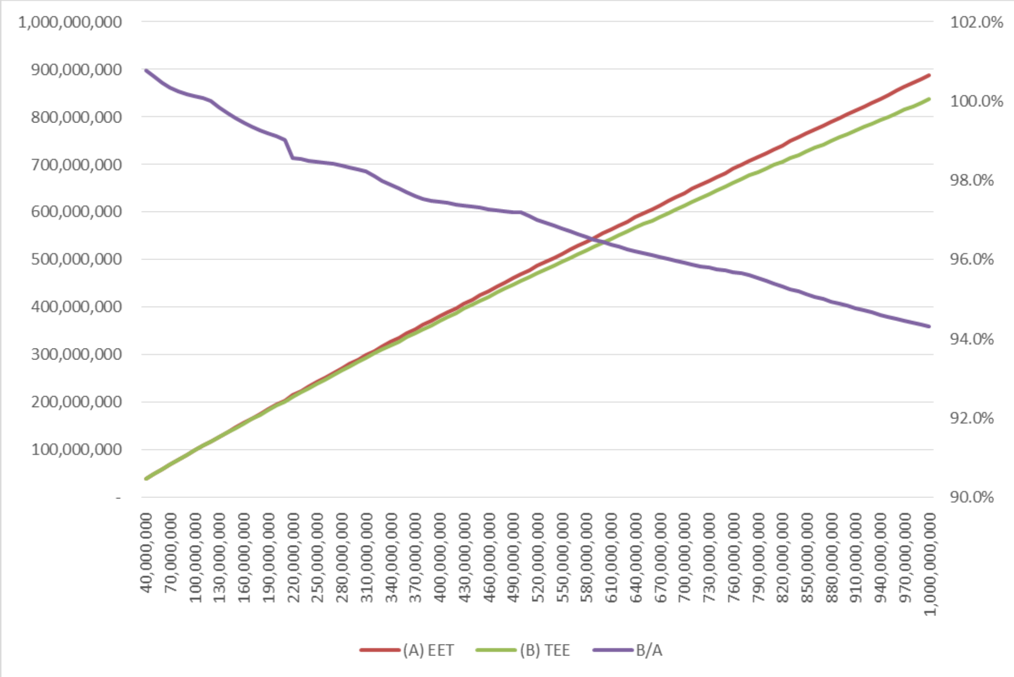
[Table 18. Illustrative Example of Calculation of PV of Annuities of IRP under the TEE Tax Regime – Case where Retirement Benefit Received from an Employer is 100 Million Won]

Year	Age	Annual annuity	PV	
			Tax	Annual annuity
1	60	5,493,093	–	5,493,093
2	61	5,493,093	–	5,333,100
3	62	5,493,093	–	5,177,767
4	63	5,493,093	–	5,026,958
5	64	5,493,093	–	4,880,542
6	65	5,493,093	–	4,738,390
7	66	5,493,093	–	4,600,379
8	67	5,493,093	–	4,466,387
9	68	5,493,093	–	4,336,298
10	69	5,493,093	–	4,209,998

11	70	5,493,093	–	4,087,377
12	71	5,493,093	–	3,968,327
13	72	5,493,093	–	3,852,745
14	73	5,493,093	–	3,740,529
15	74	5,493,093	–	3,631,582
16	75	5,493,093	–	3,525,807
17	76	5,493,093	–	3,423,114
18	77	5,493,093	–	3,323,412
19	78	5,493,093	–	3,226,613
20	79	5,493,093	–	3,132,634
21	80	5,493,093	–	3,041,392
22	81	5,493,093	–	2,952,808
23	82	5,493,093	–	2,866,804
24	83	5,493,093	–	2,783,305
25	84	5,493,093	–	2,702,238
	Total	137,327,324	1,478,400	98,521,600

The following graph in Fig 2 shows the result of analysis 2, the comparison of total annuities between EET and TEE. Red line is present value of annuities under EET system and green line is present value of annuities under TEE system. The two lines meet at retirement benefit 120 million won, meaning below 120 million TEE is favorable and above 120 million EET, the current system is favorable. Purple line shows the ratio of PV of total annuities under TEE system to PV of total annuities under current EET system, the higher the income level is, the lower the ratio is.

[Fig 2. Comparison of total annuities between EET and TEE]



[Table 19. PV of Total Annuities under EET and TEE According to the Amount of Retirement Benefit]

(Unit: Won)

Retirement Benefit	(A) EET	(B) TEE	B/A
40,000,000	39,690,355	40,000,000	100.8%
50,000,000	49,525,608	49,841,600	100.6%
60,000,000	59,302,637	59,577,600	100.5%
70,000,000	69,079,666	69,313,600	100.3%
80,000,000	78,856,695	79,049,600	100.2%
90,000,000	88,633,724	88,785,600	100.2%
100,000,000	98,410,753	98,521,600	100.1%
110,000,000	108,187,782	108,257,600	100.1%
120,000,000	117,942,977	117,954,000	100.0%
130,000,000	127,501,666	127,294,000	99.8%
140,000,000	137,060,356	136,634,000	99.7%
150,000,000	146,619,045	145,974,000	99.6%
160,000,000	156,177,735	155,314,000	99.4%

170,000,000	165,736,424	164,654,000	99.3%
180,000,000	175,295,114	173,994,000	99.3%
190,000,000	184,853,803	183,334,000	99.2%
200,000,000	194,407,944	192,665,750	99.1%
210,000,000	203,921,146	201,923,250	99.0%
220,000,000	214,236,564	211,180,750	98.6%
230,000,000	223,714,208	220,438,250	98.5%
240,000,000	233,190,939	229,695,750	98.5%
250,000,000	242,666,851	238,953,250	98.5%
260,000,000	252,142,026	248,210,750	98.4%
270,000,000	261,616,535	257,468,250	98.4%
280,000,000	271,035,855	266,626,750	98.4%
290,000,000	280,418,236	275,719,250	98.3%
300,000,000	289,800,116	284,811,750	98.3%
310,000,000	299,151,517	293,849,800	98.2%
320,000,000	308,232,302	302,397,800	98.1%
330,000,000	317,312,702	310,945,800	98.0%
340,000,000	326,392,746	319,493,800	97.9%
350,000,000	335,472,462	328,041,800	97.8%
360,000,000	344,551,874	336,589,800	97.7%
370,000,000	353,631,004	345,137,800	97.6%
380,000,000	362,634,593	353,685,800	97.5%
390,000,000	371,543,569	362,233,800	97.5%
400,000,000	380,451,521	370,781,800	97.5%
410,000,000	389,358,515	379,329,800	97.4%
420,000,000	398,264,614	387,877,800	97.4%
430,000,000	407,169,876	396,425,800	97.4%
440,000,000	416,074,352	404,973,800	97.3%
450,000,000	424,978,090	413,521,800	97.3%
460,000,000	433,881,135	422,069,800	97.3%
470,000,000	442,783,527	430,617,800	97.3%
480,000,000	451,685,304	439,165,800	97.2%
490,000,000	460,586,501	447,713,800	97.2%
500,000,000	469,483,814	456,255,750	97.2%
510,000,000	478,017,013	464,138,250	97.1%
520,000,000	486,549,721	472,020,750	97.0%
530,000,000	495,081,964	479,903,250	96.9%

540,000,000	503,613,766	487,785,750	96.9%
550,000,000	512,145,150	495,668,250	96.8%
560,000,000	520,676,136	503,550,750	96.7%
570,000,000	529,206,745	511,433,250	96.6%
580,000,000	537,736,993	519,315,750	96.6%
590,000,000	546,266,899	527,198,250	96.5%
600,000,000	554,796,478	535,080,750	96.4%
610,000,000	563,325,746	542,963,250	96.4%
620,000,000	571,854,716	550,845,750	96.3%
630,000,000	580,383,402	558,728,250	96.3%
640,000,000	588,911,817	566,610,750	96.2%
650,000,000	597,439,972	574,493,250	96.2%
660,000,000	605,967,878	582,375,750	96.1%
670,000,000	614,495,545	590,258,250	96.1%
680,000,000	623,022,985	598,140,750	96.0%
690,000,000	631,550,205	606,023,250	96.0%
700,000,000	640,058,872	613,905,750	95.9%
710,000,000	648,552,881	621,788,250	95.9%
720,000,000	657,046,646	629,670,750	95.8%
730,000,000	665,540,178	637,553,250	95.8%
740,000,000	674,033,485	645,435,750	95.8%
750,000,000	682,526,577	653,318,250	95.7%
760,000,000	691,019,460	661,200,750	95.7%
770,000,000	699,512,143	669,083,250	95.6%
780,000,000	707,877,268	676,734,750	95.6%
790,000,000	716,045,398	684,029,300	95.5%
800,000,000	724,206,981	691,312,300	95.5%
810,000,000	732,368,391	698,595,300	95.4%
820,000,000	740,529,633	705,878,300	95.3%
830,000,000	748,690,715	713,161,300	95.3%
840,000,000	756,851,640	720,444,300	95.2%
850,000,000	765,012,415	727,727,300	95.1%
860,000,000	773,173,045	735,010,300	95.1%
870,000,000	781,333,533	742,293,300	95.0%
880,000,000	789,493,886	749,576,300	94.9%
890,000,000	797,654,107	756,859,300	94.9%
900,000,000	805,814,200	764,142,300	94.8%

910,000,000	813,974,170	771,425,300	**94.8%**
920,000,000	822,134,020	778,708,300	**94.7%**
930,000,000	830,293,754	785,991,300	**94.7%**
940,000,000	838,453,376	793,274,300	**94.6%**
950,000,000	846,612,888	800,557,300	**94.6%**
960,000,000	854,772,295	807,840,300	**94.5%**
970,000,000	862,931,599	815,123,300	**94.5%**
980,000,000	871,090,804	822,406,300	**94.4%**
990,000,000	879,249,912	829,689,300	**94.4%**
1,000,000,000	887,408,926	836,972,300	**94.3%**

The sensitivity analysis below assumed that the discount rate and the rate of investment return is 1 percent excluding fees on an IRP.

[Table 20. Sensitivity Analysis–Discount Rate: 1%/Investment Return: 1%–PV of Annuities of IRP under the Current Tax Regime(EET) VS. PV of Annuities of IRP under the Hypothetical Tax Regime(TEE)]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	A. (EET) IRP Annuity	B. (TEE) IRP Annuity	B/A
1	40,000,000	-	39,869,986	40,000,000	**100.3%**
2	60,000,000	422,400	59,538,423	59,577,600	**100.1%**
3	80,000,000	950,400	79,140,219	79,049,600	**99.9%**
4	100,000,000	1,478,400	98,742,016	98,521,600	**99.8%**
5	200,000,000	7,334,250	194,721,629	192,665,750	**98.9%**
6	300,000,000	15,188,250	289,671,873	284,811,750	**98.3%**
7	500,000,000	43,744,250	470,532,729	456,255,750	**97.0%**
8	1,000,000,000	163,027,700	888,341,101	836,972,300	**94.2%**

The sensitivity analysis below assumed that the discount rate and the rate of investment return is 5 percent excluding fees on an IRP.

[Table 21. Sensitivity Analysis–Discount Rate: 5%/Investment Return: 5%–PV of Annuities of IRP under the Current Tax Regime(EET) VS. PV of Annuities of IRP under the Hypothetical Tax Regime(TEE)]

Classification	Lump sum benefit(pre–tax)	Retirement income tax	A. (EET) IRP Annuity	B. (TEE) IRP Annuity	B/A
1	40,000,000	–	39,575,020	40,000,000	**101.1%**
2	60,000,000	422,400	59,146,804	59,577,600	**100.7%**
3	80,000,000	950,400	78,664,658	79,049,600	**100.5%**
4	100,000,000	1,478,400	98,182,511	98,521,600	**100.3%**
5	200,000,000	7,334,250	195,022,730	192,665,750	**98.8%**
6	300,000,000	15,188,250	289,515,140	284,811,750	**98.4%**
7	500,000,000	43,744,250	467,644,835	456,255,750	**97.6%**
8	1,000,000,000	163,027,700	881,620,548	836,972,300	**94.9%**

4.3 Analysis 3: Taxes on Annuities of IRP under the Current Tax Regime (EET) VS. Taxes on Annuities of IRP under the New Tax Regime (TEE)[28].

The table below shows, PV of total taxes paid under a TEE system is reduced compared to under the current EET system for lower income level, while it is opposite for higher income level. It is because that the effect of tax deferral and 30% tax discount on annuity withdrawal in IRP under the current EET system is significant to high earners but it is meaninglessly slight for lower income level.

[Table 22.Comparison total taxes between EET vs. TEE]

Classification	Lump sum benefit(pre–tax)	Retirement income tax	A. (EET) IRP Annuity(PV)	B. (TEE) IRP Annuity(PV)	B/A
1	40,000,000	–	309,645	–	**0.0%**
2	60,000,000	422,400	697,363	422,400	**60.6%**
3	80,000,000	950,400	1,143,305	950,400	**83.1%**
4	100,000,000	1,478,400	1,589,247	1,478,400	**93.0%**
5	200,000,000	7,334,250	5,592,056	7,334,250	**131.2%**
6	300,000,000	15,188,250	10,199,884	15,188,250	**148.9%**

[28] Recommended in the study

7	500,000,000	43,744,250	30,516,186	43,744,250	**143.3%**
8	1,000,000,000	163,027,700	112,591,074	163,027,700	**144.8%**

The sensitivity analysis below assumed that the discount rate and the rate of investment return is 1 percent excluding fees on an IRP.

[Table 23. Sensitivity analysis: discount rate 1%– Comparison total taxes between EET vs. TEE]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	A. (EET) IRP Annuity(PV)	B. (TEE) IRP Annuity(PV)	B/A
1	40,000,000	–	130,014	–	**0.0%**
2	60,000,000	422,400	461,577	422,400	**91.5%**
3	80,000,000	950,400	859,781	950,400	**110.5%**
4	100,000,000	1,478,400	1,257,984	1,478,400	**117.5%**
5	200,000,000	7,334,250	5,278,371	7,334,250	**138.9%**
6	300,000,000	15,188,250	10,328,127	15,188,250	**147.1%**
7	500,000,000	43,744,250	29,467,271	43,744,250	**148.5%**
8	1,000,000,000	163,027,700	111,658,899	163,027,700	**146.0%**

The sensitivity analysis below assumed that the discount rate and the rate of investment return is 5 percent excluding fees on an IRP.

[Table 24. Sensitivity analysis: discount rate 5%– Comparison total taxes between EET vs. TEE]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	A. (EET) IRP Annuity(PV)	B. (TEE) IRP Annuity(PV)	B/A
1	40,000,000	–	424,980	–	**0.0%**
2	60,000,000	422,400	853,196	422,400	**49.5%**
3	80,000,000	950,400	1,335,342	950,400	**71.2%**
4	100,000,000	1,478,400	1,817,489	1,478,400	**81.3%**
5	200,000,000	7,334,250	4,977,270	7,334,250	**147.4%**
6	300,000,000	15,188,250	10,484,860	15,188,250	**144.9%**
7	500,000,000	43,744,250	32,355,165	43,744,250	**135.2%**
8	1,000,000,000	163,027,700	118,379,452	163,027,700	**137.7%**

Chapter 5. Conclusion

5.1 Problems of Current Tax System of an IRP

The analysis in this study shows that the current tax system of an IRP is in effect designed to provide more incentives for annuitization to high-income people.

[Table 25. Comparison of PV of total post tax amount between IRP(EET), self annuitization and IRP(TEE)]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	(EET) IRP Annuity(PV)	Self annuitization with post-tax lump sum(PV)	(TEE) IRP Annuity(PV)
1	40,000,000	-	39,690,355	39,842,272	40,000,000
2	60,000,000	422,400	59,302,637	59,344,829	59,577,600
3	80,000,000	950,400	78,856,695	78,742,743	79,049,600
4	100,000,000	1,478,400	98,410,753	98,140,656	98,521,600
5	200,000,000	7,334,250	194,407,944	191,942,494	192,665,750
6	300,000,000	15,188,250	289,800,116	283,763,177	284,811,750
7	500,000,000	43,744,250	469,483,814	454,660,225	456,255,750
8	1,000,000,000	163,027,700	887,408,926	834,352,775	836,972,300

[Table 26. Comparison of PV of total tax payable between IRP(EET), self annuitization and IRP(TEE)]

Classification	Lump sum benefit(pre-tax)	Retirement income tax	(EET) IRP Annuity(PV)	PV of self annuitization with post-tax lump sum	(TEE) IRP Annuity(PV)
1	40,000,000	-	309,645	2,245,283	-
2	60,000,000	422,400	697,363	3,735,920	422,400
3	80,000,000	950,400	1,143,305	5,318,555	950,400
4	100,000,000	1,478,400	1,589,247	6,901,191	1,478,400
5	200,000,000	7,334,250	5,592,056	17,629,887	7,334,250
6	300,000,000	15,188,250	10,199,884	30,114,815	15,188,250
7	500,000,000	43,744,250	30,516,186	66,456,750	43,744,250
8	1,000,000,000	163,027,700	112,591,074	200,316,978	163,027,700

The government has worked hard to make annuitization more favorable through several big and small tax changes. However, overly complex tax rules of an IRP create confusion and hinder ordinary people from choosing the best option for them[29]. A majority of employees don't have an experience in filing a tax return by themselves and are very afraid of the idea that annuitization of retirement benefit could be subject to comprehensive taxation in the later stage of the annuity period[30].

Insignificant tax incentives[31] as well as the confusion resulting from the complex tax rules have led low and middle income people to give up annuitization of retirement benefit.

Conversely, tax advantages of annuitization are immoderate[32] for higher income earners as a result. Furthermore, untouched retirement benefit by death is better treated[33] than annuity withdrawal. Therefore, wealthy people can maximize tax advantage by deferring withdrawal of IRP until death and can bequeath more assets accumulated through tax advantages under the current tax system.

[Table 27. Retirement Income Tax by Amount, Gender and Age]

classification	head count	retirement pay per person(A)	average tax per person(B)	B/A	Deferred ratio
by amount	2,454,344	14,531,594	706,561	**4.9%**	37.8%
~10%	245,434	100,184,320	5,908,059	**5.9%**	37.2%
10% ~ 20%	245,434	14,746,870	424,336	**2.9%**	48.9%

29 Low and middle income people have few chances to be offered financial advisory service on IRP, while IRP providers are willing to provide high income people with free financial advisory service.

30 A year- end tax adjustment services by withholding agent are not provided by private pensions unlike public pensions.

31 For example, when a worker receives 100 million won for 30 years' service, the retirement income tax is 1,478,400 won. Tax saved from annuitization would be 445,520 won in the case.

32 When a worker receives 1,000 million won for 20 years' service, the retirement income tax is 200,338,600 won. Tax saved from annuitization would be 60,101,508 won in the case. That amount should be material enough to consider annuitization.

33 Deferred tax of retirement benefit received from employers is reduced by 30% compared to the tax determined on the termination of the employment and flat rates(3.3~5.5%) are applied on the investment returns, according to the IRP owner's age at death, not subject to progressive income tax rates.

20% ~ 30%	245,435	8,674,302	237,773	**2.7%**	43.5%
30%~40%	245,434	6,127,819	159,746	**2.6%**	39.4%
40%~50%	245,435	4,617,406	113,660	**2.5%**	35.4%
50%~60%	245,434	3,577,066	83,554	**2.3%**	31.6%
60%~70%	245,434	2,804,340	61,694	**2.2%**	27.1%
70%~80%	245,435	2,175,701	42,642	**2.0%**	23.9%
80%~90%	245,434	1,604,463	26,356	**1.6%**	17.1%
90%~100%	245,435	803,827	7,800	**1.0%**	6.3%
by Gender [note]	2,452,407	14,537,371	706,889	**4.9%**	37.8%
Male	1,444,301	19,469,444	1,020,066	**5.2%**	37.4%
Female	1,008,106	7,471,251	258,205	**3.5%**	40.4%
by Age [note]	2,452,407	14,537,371	706,889	**4.9%**	37.8%
Under 30 years	458,324	4,165,034	111,005	**2.7%**	48.1%
30 years or more	642,100	9,478,498	313,613	**3.3%**	49.6%
40 years or more	490,829	16,278,255	734,321	**4.5%**	41.5%
50 years or more	430,233	30,579,473	1,667,504	**5.5%**	36.2%
60 years or more	430,921	15,107,952	936,349	**6.2%**	30.1%

Note: Excludes persons whose gender and age are not identifiable.
Source: Calculated based on 2015 data from National Tax Service

[Table 28. Years and Benefit Amount of Retired Employees]

(In person)

Retirement Payment	Number of Retired Employees [note]	Under 5 years	5 years or more	10 years or more	20 years or more	30 years or more
	(1=2+~+6)	(2)	(3)	(4)	(5)	(6)
10 million won or less	1,926,884	1,775,718	143,026	7,521	321	298
20 million won or less	260,233	108,213	133,379	11,916	1,263	5,462
40 million won or less	121,942	18,314	68,510	22,136	4,045	8,937
60 million won or less	39,858	4,040	13,800	16,149	1,683	4,186
80 million won or less	21,417	2,037	5,256	9,670	1,570	2,884
100 million won or less	14,679	1,061	2,858	6,506	1,848	2,406
200 million won or less	38,175	1,994	6,401	14,139	8,004	7,637
300 million won or less	11,852	303	1,907	4,466	3,345	1,831
500 million won or less	10,084	146	1,090	3,901	2,796	2,151
500 million won over	9,220	90	557	3,128	2,913	2,532
Total	**2,454,344**	**1,911,916**	**376,784**	**99,532**	**27,788**	**38,324**

Note: It does not reflect the actual length of service years of registered employees as the data includes those receiving interim retirement payment

Source: 2015 data from National Tax Service

5.2 Policy Recommendations to Improve Annuitization

5.2.1 Introduction of TEE System

"The EET regime is the most popular tax treatment system among OECD countries and many OECD countries apply a variant of the EET regime to funded private pension plans"[34]. However the current taxation of pensions in Korea is too complex for ordinary older people to understand let alone discussing tax advantage of annuitization of retirement benefits. Besides, the analysis in this study shows the current tax system is in effect providing more tax incentives to high income people.

"TEE" system where contributions are taxed, but returns and withdrawals are tax-free may increase people's confidence and help increasing annuitization of retirement benefit because it is straightforward and simple compared to EET system.

In the United States, Individual Retirement Accounts are divided into Traditional IRAs and Roth IRAs depending on the tax treatment. Roth IRAs were introduced in 1998 later than Traditional IRAs and follow a TEE system where contributions are made on a post-tax basis.

According to Sang Bum Ko(2013), Roth IRA owners expect the tax exemption in the future because Roth IRA owners may prefer future consumption to current consumption. Generally, older people tend to prefer paying tax now to deferring without knowing how much of taxes they will have to pay in the future.

[34] "Stocktaking of the Tax Treatment of Funded Private Pension Plans in OECD and EU Countries" published by OECD.

[Table 29. Basic Features of IRPs, Traditional IRAs and Roth IRAs]

	IRPs(Korea)	Traditional IRAs(US)	Roth IRAs(US)
Tax Regime	EET	EET	TEE
Eligibility	• All individuals with earned income	• All individuals with taxable compensation[35] and under age 70.5	• All individuals with taxable compensation and modified adjusted gross income is below certain amounts[36]
Contribution Limit	• Employee voluntary contribution: 18M[37] won • Retirement benefit from employers: No limit	• For 2017, Min[①, ②] ①under age 50: $5,500, age 50 and above: $6,500 ②taxable compensation for the year	
Contribution Deductibility	• Employee Voluntary contributions are made from after-tax income and partially exempt up to a limit as a form of tax credit[7M[38] x 12(15)%] • Retirement benefit in lump-sum from an employer: Fully deductible[39]	• No retirement plan at work: Fully deductible •Retirement plan at work: Deduction may be limited if he/she (or the spouse) is covered by a retirement plan at work and income exceeds certain levels.	• Not deductible
Early withdrawal penalty	None	(Before Age 59.5) 10% penalty for all withdrawals unless he/she qualifies for an exception.	(Before Age 59.5) 10% penalty for only earnings unless he/she qualifies for an exception.
Mandatory	None	• Required minimum distribution	• No required if he/she is the original

[35] Generally, compensation is what is earned from working: Wages, salaries, commissions, self-employment income, etc.

[36] For 2017, single filers: $118,000, joint filers: $186,000.

[37] Contributions include voluntary contribution into DC plan and tax-qualified personal pensions.

[38] Contributions for tax credit include voluntary contribution into DC plan and tax-qualified personal pensions.

[39] Tax is determined at the time of termination of employment and the fixed amount of tax is deferred.

Distributions		must start at age 70.5	owner.

Source: This table is revised and extended from Sang Bum Ko(2013)

According to the foregoing simulation analysis, TEE system is more favorable to low and middle income people than EET system although elimination of 30% tax discount is supposed under TEE system

In addition, introduction of TEE system will solve the following problems under the current taxation of IRP.

(i) Certain kind of capital gains from securities are tax-exempt in general income taxation but always taxed in an IRP upon withdrawal, which is against the government's effort to boost pensions and stock market.

(ii) Generally, gain from life annuities is not taxed to encourage for individuals to be prepared for their longevity risks. However, gain from life annuities received through an IRP is treated as taxable income and is subject to pension income tax, which is one of the critical tax disadvantages against an IRP.

5.2.2 Elaborate Application of Retirement Income Limit

Korean income tax rules impose limit on the total amount that can be treated as retirement income, when an executive[40] such as a member of board of directors receives a retirement benefit from a

[40] Definition of an executive is prescribed in the article 20 of Enforcement Decree of the Corporate Tax Act as followings:
(a) All members of the board of directors, such as the chairperson, president, vice president, chief director, director representative, managing director and executive director of such domestic corporation and a liquidator;
(b) A managing staff member or director of a limited partnership, joint-stock company, and limited-liability company;
(c) The executive partner of a limited liability company;
(d) An auditor;
(e) Other persons engaged in the duties similar to those specified in items (a) through (d).

company.

Formula of retirement income limit[41] of executives is as follows:

$$\frac{\text{Average annual compensation for three years before retirement}}{} \times \frac{1}{10} \times \frac{\text{Service months}}{12} \times 3$$

Exceeding the limit is subject to payroll tax which is generally much higher than retirement income tax. Besides, social contributions such as health insurance are not levied on retirement income received from employer[42].

In the United States, employer contributions are tax deductible up to the annual contribution limits[43]. The annual benefit for a participant under a DB cannot exceed the lesser of:

(i) 100% of the participant's average compensation for his or her highest 3 consecutive calendar years, or

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[41]The limit is prescribed in Article 22 of The Income Tax Act as following:
(3) The amount of retirement income shall be the total amount of income pursuant to each subparagraph of paragraph (1) (excluding the amount of non-taxable income): Provided, That where the amount of retirement income of executives prescribed by Presidential Decree (excluding the amount under paragraph (1) 1; and in cases of any amount of retirement income receivable, assuming the executives retired on December 31, 2011, referring to the amount deducting the said amount) exceeds the amount calculated in accordance with the following calculation formula, the exceeding amount shall be deemed an earned income, notwithstanding paragraph (1):
Annual average amount of the total salary earned during the previous three years prior to the date of retirement (where the period of an employment concerned is less than three years, it shall be the period of such employment calculated by month; and where the period of such employment is less than one month, it shall be one month) x 1/10 x The period of employment after January 1, 2012/12 x 3
(4) Upon applying the calculation formula in the proviso to paragraph (3), the employment period shall be calculated based on the number of months, and where the period of such employment is less than one month, it shall be deemed one month.

[42] Currently pensioners pay national health insurance on 20% of their annuity received from public pensions but annuity from private pensions are excluded from the income base used to calculate national health insurance.

[43] Source: Internal Revenue Service.

(ii) $215,000 for 2017

Employer contribution limit is smaller of 25% of compensation or $54,000 (for 2017) for a money purchase plan where employer contribution is mandatory.

Application of retirement income limit should be expanded to all workers' retirement benefit and a ceiling should be put on compensation in the formula of retirement income limit under Korean income tax code to prevent unnecessary tax expenditures.

5.2.3 Application of Limit to the Amount of Employer Contributions

"In many OECD countries, employer contributions are not limited or have separate limits to the ones applying to employee contributions, while in some countries of OECD such as U.K and U.S., an overall limit applies to the sum of employer and employee contributions in private pension plans"[44].

In the United Kingdom, the lifetime allowance for most people is £1 million in the tax year 2017−18. The lifetime allowance is a limit on the value of payouts from pension schemes – whether lump sums or annuities – that can be made without triggering an extra tax charge. It applies to the total of all the pensions excluding State Pension. Any amount over the lifetime allowance taken as a lump sum is taxed at 55%. Any amount over the lifetime allowance taken as a regular retirement income – for instance by buying an annuity – attracts a lifetime allowance charge of 25%. This is on top of any tax payable on the income in the usual way[45].

In the United States, if an individual contributes more to an IRA than the amount allowable, the excess contribution is subject to a 6 percent excise tax. Further, the penalty will be charged each year

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[44] Stocktaking of the Tax Treatment of Funded Private Pension Plans in OECD and EU Countries (2015) published by OECD

[45] Source: https://www.moneyadviceservice.org.uk

the excess contribution remains in the IRA.

In Korea, no limit is applied on the contribution to an IRP as long as the source is the retirement benefit received from an employer. Considering the tax advantage for high- income people to enjoy under the current tax regulations is immoderate, caps should be introduced to limit the tax advantages.

[Table 30. Comparison of Tax System of Private Pensions between Countries]

	Korea	UK	US
Individual income tax	Progressive tax	Progressive tax	Progressive tax
Tax regime	EET	EET	EET, TEE
Employer contribution limit	unlimited	Overall limit :Employee + employer contributions (annual limit) :100% of the individual's income up to GBP 40,000 (life-time limit) GBP 1,000,000	Overall limit(annual) : Employee + employer contributions · 401(k) and 403(b): 100% of earnings up to USD 53,000 · 457(b): 100% of earnings up to USD 18,000 · Simplified Employee Pension Plans (SEP): 25% of earnings up to USD 53,000 · IRA: 100% of taxable earnings up to USD 5,500(6,500)
Employee contribution limit	18 million* won per year *Employee Voluntary contributions are made from after-tax income and partially exempt up to a limit as a form of tax credit[7M x 12(15)%]		
Tax treatment on annuity withdrawals	Different tax treatments according to the source of contribution · employer contribution: separately taxed+ discount by 30% of tax on lump-sum · employee contribution: Subject to marginal income tax rates	subject to marginal income tax rates,	subject to marginal income tax rates,
Tax treatment on lump sum withdrawals	Distinct from tax treatment on annuities · employer contribution: separately taxed and generally lower due to generous deductions than payroll tax · employee contribution: 16.5%	· Up to 25% of the total value of assets accumulated: tax-exempt · Above: taxed at marginal rate %	Identical with annuity withdrawal

Source: This table is extracted and extended from "Stocktaking of the Tax Treatment of Funded Private Pension Plans in OECD and EU

Countries” published by OECD

5.2.4 Imposition of Required Minimum Distribution

In the United States, withdrawal from traditional IRAs must be started when the IRP owner reaches age 70½. Required minimum distribution(“RMD ") is the minimum amount an IRP owner must withdraw each year. If the IRP owner does not take any distributions, or if the distributions are not large enough, he/she may have to pay a 50% excise tax on the amount not withdrawn as required.

In Korea, an IRP owner can keep retirement funds in his/her account until he/she dies. In addition, tax relief is granted to lump sum withdrawal due to the death of an IRP owner, which is excessive tax expenditure for high income people, considering the fact that an IRP account with insubstantial amount tends to be early terminated or withdrawn.

Taxation on an IRP is very favorable to high- income people who can keep their IRP untouched for long time owing to other sufficient wealth to live with. Any measures such as RMD should be made to correct the unnecessary tax relief granted to high income people under the current tax codes.

5.2.5 Abolishment of Tax Benefit for Withdrawals due to Inevitable Causes and Medical Care

Pension income tax is applied upon a withdrawal due to an inevitable cause such as death, immigration or medical care just like annuity withdrawal: the difference is that a withdrawal due to an inevitable cause or medical care is separately taxed regardless of the source or the amount, not subject to comprehensive taxation. The tax benefit is immoderate because the tax benefit could be enjoyed mainly by high-income people who are subject to high marginal tax rates in comprehensive taxation. Besides, the tax break is unnecessary and cannot be justified considering there is no excise tax on early withdrawal and tax treatment on lump-sum from an IRP is already favorable enough to high-income people compared to the general tax treatment.

Some countries impose penalty for early withdrawals in addition to income tax on the amount withdrawn. For example, in U.S. an individual must pay an additional 10% early withdrawal tax if he/she withdraws money from his/her IRA prior to age 59½. There are exceptions to the early withdrawal penalty, such as death, disability, first-time home purchase (up to $10,000), etc.

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국문초록

본 연구는 퇴직금의 연금화(annuitization)를 장려하기 위한 퇴직연금세제를 통한 유인정책에도 불구하고 연금화율이 한자리수에 머무르고 있는 현상에 대해 현행 세제의 문제점을 분석하고 개선방안을 제시하는 것을 목적으로 하고 있다.

현행 연금세제의 소득계층별 연금수령 유인정도를 평가하기 위해 퇴직금을 IRP에 이체하여 연금형태로 수령하는 방법과 일시금 수령 후 분할인출하는 방식(자가연금방식)을 비교하여 소득계층별로 분석한 결과 평균적인 근로자보다 훨씬 고액의 퇴직금을 수령하는 소득계층에게 유인이 더 큰 것으로 나타났다.

안정적인 노후소득을 위해 퇴직소득의 연금화가 반드시 필요한 저·중위소득계층을 실질적으로 지원하기 위해서는 쉽고 간결한 연금세제가 필수적이다. 미국의 Roth IRA와 같이 과세된 금액을 입금하고 운용하는 동안 발생하는 운용수익에 대해 운용시나 인출시에 과세하지 않는 T-E-E(Taxed-Exempt-Exempt) 과세체계의 개인형퇴직연금제도(Individual Retirement Pension, IRP)를 적용하는 경우, 현행 입금시와 운용시에는 과세하지 않고 인출시에 과세하는 EET체계를 가진 IRP와 비교 ·분석한 결과 퇴직소득세 30%의 감면을 적용하지 않더라도 일부 고소득층을 제외한 대다수의 세후 수령액 및 세부담은 개선되는 것으로 나타났다.

이상의 시뮬레이션 분석을 통해 대다수 국민들의 세부담을 증가시키지 않고 세제를 단순화하여 세금신고납부에 대한 부담을 경감시켜 실질적으로 퇴직소득을 연금화하는 방안으로 TEE체계를 추가적으로 도입할 것을 제안한다. 또한 퇴직연금과 관련하여 현재 고소득자들에게 제공되는 과다한 세제혜택을 해외사례와 비교하여 합리적 수준으로 제한할 것을 제안한다.

주요어: IRP, 퇴직연금, 연금소득세, TEE과세체계, 임원퇴직소득한도