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Doctoral School of Economic and Regional Sciences

Pension Reform in Indonesia:
The Strategy to Reduce Pension Liabilities

Doctoral (PhD) Dissertation

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Gödöllő, Hungary

2025

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ABBREVIATIONS

APBN	Anggaran Pendapatan dan Belanja Negara / Indonesian National Budget
BPS	Badan Pusat Statistik / Central Statistics Agency
DB	Defined-Benefit
DC	Defined-Contribution
CS	Civil Servant
CSP	Civil Service Pension
FF	Fully-Funded
FIPF	Financial Institutions Pension Funds
GDP	Gross Domestic Product
ILO	International Labour Organization
IMF	International Monetary Fund
IPD	Implicit Pension Debt
MPP	Mandatory Private Pension
NCSA	National Civil Service Agency
NDC	Notional Defined-Contribution
NRIA	National Research and Innovation Agency
OECD	Organization for Economic Cooperation and Development
PAYG	Pay-As-You-Go
RR	Replacement Rate
THP	Take Home Pay
VPP	Voluntary Private Pension

1 INTRODUCTION

1.1. Research Background

The public pension system is the fundamental component of the pension system. It comprises one or more old-age insurance plans with mandatory participation for a portion of the population. Public pensions have become an essential issue in the government budget since they are significant economic and redistributive systems that frequently influence state budgets and the financial position of other social security components. If the system is to be established in the long run, all countries worldwide must devise the finest scheme (Cichon & Latulippe, 1997). Income adequacy, financial sustainability, balanced intergenerational transfer, no excessive labor taxes, and reducing labor market distortions induced by pensions are common concepts of pension design (Raab & Gannon, 2011). A public pension scheme needs to serve to smooth consumption across the life cycle; the pension benefits received by pensioners must be adequate to meet pension costs; the fundamental funding mechanism of pensions from the working population to the retired population should be balanced; the pension system should provide an incentive to stay in the labor force for as long as feasible; and a pension scheme should reduce the biases that influence labor supply decisions (Raab & Gannon, 2011).

Since pension schemes are complex and intricate, designing and implementing the best pension system is challenging. Indeed, pension systems throughout the world will face some challenges. Pension funds are subject to both uncertainty and risk. There are at least three types of uncertainties: macroeconomic shocks, demographic shocks, and political risks (Barr, 2000). Ageing causes critical fiscal concerns (Baksa et al, 2020). Because of the aging of society, which results in a substantial shift in the ratio of active employees to seniors, the pension system is anticipated to offer enormous economic, financial, and sociological obstacles, as well as other worldwide concerns. Public pension spending in Europe is elevated already today, accounting for more than half of total public expenditures. The higher the retiree-to-working-person ratio, the more difficult it is to achieve budgetary balance. It is projected to considerably influence economic growth and pressure the government to raise spending. Long-term financial sustainability is unquestionably a key concern for pension plans (European Commission, 2010; Raab & Gannon, 2011; Szabo, 2017). Meanwhile, according to Christensen & Moore (2014), pension issues are most often the result of a mix of the following challenges and concerns:

- Intentional underfunding: Some countries need better financial choices by failing to make the required yearly contributions to pension systems to cover pensioners' pension

benefits. It has the potential to jeopardize worker benefits and increase unfunded liabilities.

- Poor management: Bad decisions regarding pension schemes can also lead to significant issues. Some governments have consistently projected incorrect assumptions about the market returns and have yet to boost contributions to compensate, resulting in an underfunded pension system.
- Overgenerous benefit: Some governments have increased pension expenses by offering or authorizing more significant benefits than the labor market can absorb. Excessive rewards can quickly balloon to heights that governments cannot support.
- The Great Recession: Economic downturns can significantly impact investment outcomes, resulting in lower-than-expected returns on pension system assets. Lower returns worsen funding inequities and can exacerbate difficulties.

Furthermore, according to the Organization for Economic Cooperation and Development (OECD) (2021), delivering financially and socially viable pensions in the future remains the most significant long-term problem for pensions. Putting pension systems on stable ground for the future will necessitate difficult policy decisions. Pension plan expenditures will likely diminish with the change, and payments will become increasingly more challenging. The upcoming issues of aging populations and their consequences for guaranteeing long-term fiscal sustainability and social protection gaps have been particularly effective reform stimulants (European Commission, 2010).

According to Ward & Roel (2022), various potential driving elements for pension reform and its timing have been highlighted in the literature. First, a body of literature examines the role of demography. Second, the magnitude of the implicit pension debt (IPD) may be a factor in Pay-As-You-Go (PAYG) 's defined-benefit (DB) pension reform. Third, external limitations such as Europe's Stability may encourage pension reform. A fourth motivation for change is removing distortions generated by present arrangements that enable employees to work less or retire earlier than they would under a system with better work incentives. Finally, ideology can have a role. The Thatcherite paradigm shift and the promotion of private pensions by foreign agencies such as the World Bank fueled pension privatization in Latin America.

However, reforming the pension system is a challenging decision since pension reform is one of the most divisive, unpopular, and potentially dangerous policies. Despite the crisis, governments' attention was drawn to long-term pension issues (OECD, 2021). Pension reform can be challenging because it necessitates long-term judgments amid short-term political

pressures. Pension reform is controversial and faces significant political opposition since the necessity for change may not be easily understood or supported by individuals. It may result in a propensity to postpone reforms when changes become effective, leaving difficulties for successive governments and generations to deal with (European Commission, 2010).

Consequently, reforming public pension systems is an increasingly pressing issue on the political agendas of most OECD countries, European nations, and other nations in the world. They must implement radical reforms that consider sustainability and intergenerational equity (Gern, 2002; European Commission, 2021). The potential of worsening future imbalances has prompted policymakers worldwide to implement pension reforms that have taken various paths in different nations (Herce, 2002).

Several nations have either adopted extensive reforms that have entirely changed their pension systems or minor modifications such as paying more in contributions, working longer, or receiving fewer pensions, can frequently have a significant influence on future pension benefits when combined, due to the enormous budgetary demands of public pensions and to cater for the long-term sustainability of public finances. Significant reform attempts have been made to improve the financial and social protection efficiency of pensions in payment. In certain situations, modifications have entirely transformed the underlying framework of pension provision. In others, reform has been incremental, including a succession of tiny modifications over time that frequently build up to significant changes in the features and operation of programs (OECD, 2007; European Commission, 2010; OECD, 2021).

European countries have utilized reforms to broaden and solidify the income source for current pension expenditure and to broaden coverage to provide social protection for those with limited access to pensions. Some efforts have been developed to enhance intergenerational equity in benefit assessment and the long-term viability of earnings-related pensions (European Commission, 2010). Brazil and Sweden have curtailed access to earnings-related pensions in the last two years of rising pension ages. Recent changes in Chile, Germany, Latvia, Mexico, Slovenia, and the Slovak Republic have all emphasized social sustainability by safeguarding pensions for low-income pensioners. Simultaneously, political tradeoffs may be found in specific recent reform initiatives. Higher pension ages were frequently coupled with more permissive early retirement alternatives. Other nations reversed course, rolling back more ambitious reforms and gradually bringing in changes (OECD, 2021).

Meanwhile, the Mercer CFA Institute Global Pension Index (the Index) evaluates Indonesia's pension system as having low adequacy and sustainability. The Index analyzes all pension systems based on adequacy, sustainability, and integrity. Table 1 shows that the

Indonesian index value decreased from 50.4 to 49.2 in 2022, increased slightly in 2023, but decreased in 2024 (Mercer CFA Institute, 2021; Mercer CFA Institute, 2022; Mercer CFA Institute, 2023; Mercer CFA Institute, 2024).

Table 1.

Indonesia Index Comparison for 2021-2024.

Indicators	**Indonesia (2021)**	**Indonesia (2022)**	**Indonesia (2023)**	**Indonesia (2024)**
Ranking	35	39	41	42
Adequacy Sub-Index	44.7 (37th)	39.3 (43rd)	41.6 (45th)	38.1 (46th)
Sustainability Sub-Index	43.6 (30th)	44.5 (31st)	50.6 (28th)	50.4 (28th)
Integrity Sub-Index	69.2 (29th)	71.5 (27th)	69.8 (32nd)	69.3 (36th)
Index Comparison	The index decreased from 51.4 in 2020 to 50.4 in 2021.	The index decreased from 50.4 in 2021 to 49.2 in 2022.	The index increased from 49.2 in 2022 to 51.8 in 2023.	The index decreased from 51.8 in 2023 to 50.2 in 2024.

Source: The Mercer CFA Institute Global Pension Index 2021, The Mercer CFA Institute Global Pension Index 2022, The Mercer CFA Institute Global Pension Index 2023, and The Mercer CFA Institute Global Pension Index 2024.

Regarding adequacy, Indonesia's civil service pension (CSP) payment is inadequate to support pensioners' living costs. Particularly for mid-level to senior officials, the pension benefits only comprise a modest portion of the overall take-home income earned by civil servants. As a result, relative to the general salary that mid-to-high-level officials were getting before retirement, their pension benefits may need to be more robust (Muliati, 2013). The highest pension benefits under Government Law Number 8 of 2024 are IDR4,779,900 (EUR283.52), which is less than the Upah Minimum Provinsi (Provincial Minimum Wage) of 2024 in Jakarta, Indonesia's capital city, of IDR5,067,381 (EUR300.58) (Keputusan Gubernur DKI Jakarta No. 818/2023). Meanwhile, regarding sustainability, Indonesia's public sector

pension system faces serious challenges because of unfunded liabilities (Hadi et al., 2022). According to Figure 1, pension benefit payments have consistently climbed over the past ten years (2010 to 2020), rising from 2999 million USD in 2010 to 7119 million USD in 2020, a 137.36 percent increase.

Figure 1.

Pension Payments for Civil Service Pensioners in Indonesia (2010–2020).

Source: Indonesia National Budget (APBN), 2010–2020.

In addition, the 2020 Population Census shows that Indonesia's population has risen significantly to 270 million. According to projections from the Central Statistics Agency of the Republic of Indonesia (Badan Pusat Statistik – BPS), the population is expected to grow to 312.51 million in 2040 and 294.11 million in 2030 (BPS-Statistics Indonesia, 2022). In Indonesia, the percentage of the 65-year-old or older population steadily rises, and the dependence ratio increases annually. Between 2010 and 2021, Indonesia's dependence ratio rose by almost 28%, and it will continue to increase significantly in the future (Hadi et al., 2022) (World Bank, 2022).

However, the CSP scheme's underlying demographics have less to do with Indonesia's age distribution, but more to do with past hiring trends (World Bank, 2020). A plot of the active

civil servants by age based on data from the National Civil Service Agency (NCSA, 2024) (Table 2) shows 3,566,141 civil servants as of December 2024. Meanwhile, the number of pension beneficiaries at the end of December 31, 2020, was 2,818,119 people, 2.85 million people at the end of December 31, 2021, and 2,913,731 people (814,313 from central government and 2,099,418 from local government) as of June 2024 (PT Taspen, 2020-2021, 2024). Due to historical hiring trends, Table 2 presents the current distribution peaks of active civil servants for the 41–60 cohort. About 1.2 million civil servants are 50 or older and getting close to the standard retirement age 58. A significant portion of the group is already qualified for early retirement without actuarial reduction since the CSP scheme already allows retirement at age 50 with 20 or more years of service.

Table 2.

Civil Servants by Age in Indonesia.

Age (Year)	Civil Servants
18-20	447
21-30	269,543
31-40	812,027
41-50	1,244,895
51-60	1,213,995
More than 60	25,234
Total	3,566,141

Source: National Civil Service Agency, 2024.

This demographic trend will cause the number of retired civil servants to rise quickly, making them the largest retiree category in the upcoming years. CSP pensioners' growth rate is higher than the average growth rate of active civil servants. Since most civil servants hired in the middle of the 1970s and early 1980s have already reached retirement age, this trend will likely continue for the next ten to fifteen years (Muliati, 2013). Even the number of civil servants has been declining every year since 2015 (NCSA, 2024). Short-term increases in the pension bill will result from this wave of retirements.

Demographic changes are also a major contributor to the need for reform. Declining mortality and fertility rates have led to significant demographic changes in Indonesia. Life expectancy has increased at the same time as the number of children has decreased, leading to

a rapidly aging society (Muliati, 2013). The United Nations Population Prospects, which reports historical and projected life expectancy at discrete ages, shows that Indonesia's life expectancy at age 60 was around 15 years in the 1970s and has increased to 18.6 years in 2020. It is expected to grow by another 3 years by 2040. Therefore, life expectancy is not only increasing but also rising at a much faster rate (World Bank, 2020). In 2021, male life expectancy increased to 69.67 years, up from 67.89 years in 2010, while female life expectancy was higher at 73.55 years in 2021 and 71.83 years in 2010 (BPS-Statistics Indonesia, 2021). It will lead to a high increase in the number of older people and the need for an adequate pension system to meet their income needs. If reforms are not implemented, rising life expectancy and high pension indexation will eventually increase the pension bill.

However, the current retirement age of the CSP system in Indonesia is relatively low compared to life expectancy and remains unchanged. Currently, the retirement age varies significantly by program and group type. The standard retirement age for civil servants is 58 years old, but can be extended for certain positions to 60, 62, 65, or 70 years old based on the government's needs. The low retirement age results in a short contribution period but a longer period to receive benefits. It will also put significant pressure on the CSP system as fewer civil servants have to support the growing number of older people.

As a result, Indonesia's government has to reform its pension plan for civil servants. To the most significant degree possible within institutional restrictions, the sustainable reform of the pension system must consider the fiscal sustainability and adequacy of pension payments to meet the goals of income smoothing and poverty reduction (Grech, A.G., 2010; Grech, A.G., 2018). While preserving economic viability, the pension reform will lower the pension budget and boost incomes. According to Ananta et al. (2021), the Indonesian government intends to switch the pension program from a DB to a defined contribution (DC). However, Indonesia has to decide on several factors before creating a new system to replace the CSP system. A comprehensive approach to pension reform is required to lower pension obligations and provide a well-designed pension system that offers a decent pension to all retirees.

1.2. Research Objectives

This study proposes a strategy for developing more sustainable pension liabilities in Indonesia's CSP system. The unsustainability of the public pension system can have significant consequences for Indonesia's economy. Thus, the government of Indonesia should reform it to prevent its bankruptcy.

This study picked the Indonesian CSP system as its case study for two reasons. The first argument is that implementing reforms for a CSP system in Indonesia may be an example for other developing countries. Second, the researcher's advantage in obtaining access to the essential study data, as the researcher formerly worked in the government and dealt with CSP concerns, is the justification for selecting the Indonesian case. In this context, the researcher may benefit from prior knowledge of some of the issues the central government experienced when analyzing the CSP system. Furthermore, understanding the more extensive background of Indonesia and how they administer their pension programs is required to comprehend CSP programs in Indonesia; hence, the next section will offer a summary of the existing CSP schemes in Indonesia.

A suggestion for creating more manageable pension liabilities in Indonesia's CSP system is put forth in this research. The research questions will be used to explain and provide recommendations to improve the reform of the Indonesian CSP system. This study is intended to add to the literature on developing the Indonesian public sector pension systems. Analyzing CSP systems in Indonesia could be a good lesson. It could be a starting point for the Indonesian government (Indonesian policymakers) and other nations looking to improve their pension systems. Plans to lower pension liabilities need consideration of the findings of this research. As a consequence, a pension system with excellent design will be achieved. Furthermore, scholars have not extensively studied the Indonesian pension system. Therefore, this study would benefit scholars worldwide by adding to the literature on the Indonesian pension system.

1.3. Research Questions and Hypotheses

To achieve the research objective and obtain valid data and information, the researcher should strengthen himself with relevant and suitable research questions. The main research question is, “How and whether is it possible to reform the current Indonesian CSP system to be more sustainable in the long term?” The following research questions will be examined to answer this question:

a. How is the adequacy of the current Indonesian CSP system?
b. How high are the risks of the unsustainability of the current CSP system?
c. How can a more sustainable pension system be designed, and what is the cost?
d. What are the benefits of the new pension system, and what are the risks of achieving them?

e. Can Indonesia afford to reform its CSP system, considering the cost and benefit of reform with the various risk scenarios?

Furthermore, this study has proposed six hypotheses to answer the research questions. Hypotheses 1 through 3 provide answers to the second research question regarding the sustainability of the present Indonesian CSP system, which has been implementing the PAYG and DB schemes. Hypotheses 4 through 6 focus on providing answers to the fourth research question regarding the researcher's recommendation to implement a new scheme for the Indonesian CSP system.

Hypothesis 1 examines the impact of contribution rates on the sustainability of the Indonesian CSP system. Hypothesis 2 assesses the effect of retirement age on the sustainability of the Indonesian CSP system, whereas Hypothesis 3 examines how the salaries of civil servants impact the system's sustainability. Hypothesis 4 looks at how the sustainability of the Indonesian CSP system would be influenced if the pension system was switched from the DB scheme to the DC scheme. While Hypothesis 6 focuses on the impact of investment return on the adequacy of the Indonesian CSP system, Hypothesis 5 examines the impact of modifying the pension benefits formula on the system's adequacy. Therefore, the research hypotheses are as follows:

a. H1: Increasing the contribution rate positively impacts improving the long-term sustainability of the Indonesian CSP system.
b. H2: Increasing the retirement age positively impacts improving the long-term sustainability of the Indonesian CSP system.
c. H3: Increasing civil servants' salaries negatively impacts improving the long-term sustainability of the Indonesian CSP system.
d. H4: Reforming the pension system from a DB scheme to a new scheme is crucial to achieving the long-term sustainability of the Indonesian CSP system.
e. H5: Changing the pension benefits formula positively impacts improving the adequacy of the Indonesian CSP system.
f. H6: Investment return significantly impacts improving the adequacy of the Indonesian CSP system.

2 LITERATURE REVIEW

This chapter demonstrates pension system features, the importance of pension systems, pension design concepts, and critical worldwide trends in pension reforms. This chapter is organized as follows. First, the chapter focuses on the characteristics of pension systems to provide context for understanding the diverse designs of pension plans worldwide. Second, to understand pension reform, this chapter discusses the duties of pension systems. Understanding why governments adjust pension systems improves when the adequacy and sustainability of pension systems are defined. Third, to better comprehend the efforts made by governments to achieve the objectives they have set for their pension systems, the chapter describes significant worldwide trends in pension reforms, particularly in developed nations. Fourth, the chapter examines some pension modeling to select the best one to help reform an existing pension system and design a new Indonesian CSP system. Finally, the chapter summarizes the existing CSP schemes in Indonesia to understand the significant background of how Indonesia administers its pension programs.

2.1. Types of Pension Systems

A pension system is a structure that collects money during a person's working life in return for future payments after that person retires. Therefore, the contributions compensated during a participant's working life and the advantages to which that individual is entitled once retired are critical to pension schemes (World Bank, 2008).

Nearly all nations today have public pension systems. Their prominent role is to guarantee financial safety for elderly individuals, prevent impoverishment, and reduce unfairness in old age (ILO, 2018). According to Barr (2011), the roles of pension systems for individuals are to smooth consumption and provide insurance. Consumption smoothing refers to keeping an individual's quality of living in retirement the same as before retirement (flattening spending during the transition from employment to retirement). In contrast, insurance protects against becoming poor in old age. In other words, the fundamental objective of a pension system is to offer financial stability to older people, which involves eliminating poverty and smoothing individual spending (Barr, 2018; OECD, 2018). Meanwhile, the secondary roles of public pensions are poverty relief and redistribution through supporting economic development (Barr, 2018).

According to Barr & Diamond (2006), pensions can be structured in various ways. Pension systems are classified as Fully-Funded (FF) or PAYG based on their structure. Meanwhile, whether the benefits or contributions are fixed, pension schemes are classified as DB or DC.

FF Pension System

Pensions are paid out of a fund that has grown through the contributions of its members. FF plans invest contributions into financial (or occasionally physical) assets, with the earnings going into the plan's fund. Thus, financing is a technique of gathering financial assets that are later traded for commodities. Although FF programs may adopt numerous forms, they generally have enough cash to cover all outstanding debts (more precisely, liabilities are dictated by available money). Its historical savings bind a generation if there is no transfer between generations. When an individual retires, the pension fund will keep their initial payments and the interest and dividends generated on them if there is no direct transfer between individuals (Barr & Diamond, 2006). Regarding intergenerational transfers, the PAYG system relies on a complete transfer of resources from contributors to retirees, but this does not imply that the system is not contributing. Meanwhile, in the FF schemes, there are no transfers of any kind, and contributiveness attains its highest point (Devesa & Doménech, 2020).

PAYG Pension System

Instead of FF programs, pension payments are made from present earnings under PAYG systems. The government typically manages PAYG programs. The majority of public pension programs are PAYG. PAYG can be viewed economically in a variety of ways. The state's promise that if a worker makes payments today, he will get aid in the future is the basis of his claim to a pension as an individual contributor. The guarantee parameters are specific, as outlined in each country's social security legislation (but subject to modification). In aggregate, the state taxes one set of people and distributes the proceeds to another yearly or lifelong. The proper function of PAYG is to disperse and share risks between generations (Barr & Diamond, 2006).

PAYG systems operate on an implicit and ongoing intergenerational contract (Devesa & Domenéch, 2020). Thus, the PAYG system is based on the concept that the current working generation automatically pays for retirees' pension benefits (Lee et al., 2025). When current contributors retire, they expect future contributors to pay their pensions. To fulfill the latter

conditions, the intergenerational contract must be considered permanent (Devesa & Domenéch, 2020).

Furthermore, one of the most important aspects of a PAYG system is its sustainability (Hu & Stauvermann, 2023). This system is strongly linked to changes in demographic structure (Lee et al., 2025). The issue stems from the possibility that the pension system may fail owing to decreased birth rates and rising life expectancy (Hu & Stauvermann, 2023). The rise of older people in the general population, also known as demographic change, has been characterized as a one-dimensional process. In truth, population change is the result of multiple phenomena co-occurring. The two most major explanations are that people are living longer lives (longevity effect) and that big "baby boom" cohorts are approaching retirement age (Schön, 2023).

Given a fixed retirement age, as life expectancy rises, so does the number of retired people. Simultaneously, a decrease in children results in fewer pension contributions. As a result, it offers significant fiscal issues (Schön, 2023) since there is an imbalance between revenue and expenditure, with expenditures rising while revenue falls and other variables remaining constant (Hu & Stauvermann, 2023). Therefore, with diminishing population growth, PAYG may fail to pay enough pensions. A shrinking workforce implies that contribution rates may need to rise dramatically, imposing economic burdens on the working generation, or pension benefits may need to be gradually reduced over time; as a consequence, increasing the burden on future generations, resulting in severe consequences such as poverty and malnourishment for the older people (Lee et al., 2025); (Hu, & Stauvermann, 2023).

DB Pension System

In a DB plan, an employee's pension is determined by their income history, which may include years of service. An important design factor is how awards are handed out. The participant's wages determine the pension under a final pay plan during the final year or years of service. It might be based on a person's real or comparative wage over a long period, such as their whole career (Barr & Diamond, 2006).

The type of benefits can be classified as DB or DC based on who bears the (investment and mortality) risk. In a (funded or unfunded) DB system, the pension plan sponsor typically carries the risk, which might be the company or the government. The fact, however, is more complicated. In an unsustainable, unfunded DB system, economic or demographic risk is passed down to future generations through greater payments or government transfers. In an

unsustainable company plan, the risk is transferred to pensioners and workers still living when the plan goes bankrupt (Holzmann & Hinz, 2005).

The rate of return on financial assets is crucial for financial sustainability in both DB schemes and DC schemes. In a DB scheme (such as a standard first-pillar plan with reserves), a sustained greater real rate of return on assets requires a lower contribution rate or fewer transfers from sponsors or the government than otherwise, immediately improving financial sustainability (Holzmann & Hinz, 2005).

DC Pension System

Currently, DC pension schemes are significantly more popular, mainly due to the rapid dynamic growth of financial markets, particularly over the last two decades, which has supplied investors with various appealing and advanced financial products (Baltas et al., 2021). Each participant in a DC plan pays a percentage of their salary into the account. These contributions are utilized to purchase assets, and the assets' receipts are then accumulated in a joint account. The account assets support post-retirement consumption through annuities or other means when retirement comes (Barr & Diamond, 2006).

In a (funded or unfunded) DC system, the individual bears the risk. Individuals also face the risk that the benefit formula or indexation practice may change. Insurance firms can absorb demographic and investment risks if annuitization is widespread or passed on to future generations if benefits are eventually supplied through broad public pooling (Holzmann & Hinz, 2005).

The long-term investment horizon is a key element of DC scheme administration. It is critical to manage interest and inflation rates that change over time. DC plan participants deal with financial hazards and the risk of passing away before retirement. To mitigate this risk, most DC plans integrate death benefit provisions during the accumulation term (Li & Wei, 2024). In DC schemes, issues of unsustainability arise as a result of low or even negative real rates of return (Smetters, 2002): a guaranteed minimum rate of return or a minimum pension, an alternative for social pensions, or simply a political obligation to pay if the amount is insufficient (Holzmann & Hinz, 2005).

Notional DC Pension System

A notional DC scheme (NDC) is a publicly administered DC plan that is unfunded (Holzmann & Hinz, 2005). The NDC plan indicates characteristics of funded DC plans but retains the PAYG pension financing method. The NDC plan maintains the PAYG pension

financing technique while indicating features of funded DC plans. Similar to the PAYG pension system, pension benefits are funded by the pension payments of the young employees of the same period based on the account records (Wang, 2021).

Individuals' cumulative contribution amounts and notional interest rates are used to compute pensions (Barr & Diamond, 2008). The government determines notional interest rates (Barr & Diamond, 2008; Holzmann & Hinz, 2005). The government does not gradually collect money from individuals to cover future retirement costs; instead, it maintains records of individual contributions. Individual account balances are "notional" when they are recorded. Thus, NDC pensions resemble funded DC plans in that they pay an income stream whose current value over the person's estimated lifespan matches the person's accumulation for retiring, but with interest levels set by laws rather than market rates (Barr & Diamond, 2006).

NDC schemes improve intergenerational fairness by connecting contributions to benefits and improving financial sustainability through automated adjustments (e.g., based on life expectancy). However, this may lead to less steady income for retirees, disproportionately affecting lower-income groups (Lee et al., 2025). Sweden modifies the account return rate to balance its assets and pension obligations. In this way, the authority has more control over the pension system's stability than it has over the current PAYG pension system, which enhances the system's credibility among the public (Wang, 2021).

2.2. Adequacy and Sustainability of Pension Systems

The main objectives of mandatory public pension systems are adequacy, affordability, sustainability, and robustness. Adequacy involves providing benefits to the entire population that are sufficient to prevent old-age poverty and help smooth consumption throughout a person's lifetime; sustainability pertains to the financial stability of the pension system in both the short and long term; affordability is the capacity of individuals and the government to finance the system; and robustness refers to the retirement security system's ability to withstand significant shocks (Holzmann & Hinz, 2005). This part of the literature review will focus more on the adequacy and sustainability below.

2.2.1. Adequacy of the Pension System

Adequacy's primary goal is to ensure that retirees have a pleasant, long-term means of subsistence (Whitehouse, 2014). Adequacy is described by Whitehouse (2014) as resting on

local family patterns, being decided by the real incomes of neighboring communities, and being reasonable to stop poverty from spreading to other groups. The Mercer CFA Institute (2024) assessed several factors, including benefits, system design, savings, government aid, home ownership, and expanding assets, to determine the adequacy of the pension system.

The number of benefits, replacement rate (RR), and the amount of time that pensioners used the benefit were all aspects that the European Commission (2017) measured. The RR can be broadly defined as the portion of pre-retirement income distributed as pension benefits (Chybalski, 2016). Policymakers typically use two techniques to determine adequacy: a specific income threshold, if deemed appropriate, or a percentage of RR based on pre-retirement income (PLSA, 2016).

In addition to using benefit indexation in their analysis, Holzmann and Guven (2009) propose two primary RR variations: gross and net (Chybalski, 2016). The net pension RR is calculated by dividing the individual's net pension entitlement by his or her net pre-retirement earnings, accounting for workers' and retirees' personal income taxes and social security payments. The effectiveness with which a pension plan replaces earnings, the primary source of income prior to retirement, is measured (OECD, 2025). The International Labour Office Number C102—Social Security (Minimum Standards) Convention requires the minimum RR to be 40% of previous incomes after 30 years of contributions (International Labour Office Number C102-Social Security (Minimum Standards) Convention 1952).

Furthermore, the World Bank defines a viable pension system as one that ensures that people, regardless of their level or form of economic activity, receive certain benefits to protect them from poverty and allows most people to keep their consumption smooth throughout the life cycle (Holzman & Hinz, 2005). The European Commission (2018) defines adequacy in three ways. The first is defined according to the ability of pension income to help retirees avoid poverty. According to the second definition, adequacy is determined by the ability to replace income earned before retirement. The third definition defines adequacy according to the retirement period that can be covered.

According to the Organization for Economic Cooperation and Development (OECD), an adequate pension system replaces a worker's earnings at a level that enables them to maintain a standard of living in retirement comparable to that enjoyed in working life—even though retirement incomes often do not just replace earnings (OECD, 2013). Meanwhile, the International Labour Organization (ILO) argues that the purpose of a pension system is to ensure that a retiree will have an adequate quality of living above the poverty line for the rest of their life (ILO, 2014).

The aforementioned criteria of pension adequacy, developed by the four major international organizations that gather statistics on pension systems, serve as the basis for defining adequacy. Regarding the two aspects of pension adequacy—preventing poverty and balancing consumption over life—these concepts are very consistent (Chybalski, 2016).

2.2.2. Sustainability of the Pension System

The World Bank's 1994 report was the first to address the financial sustainability of the public pension system. It included a measurement of the system's balance concerning the impact of population aging (World Bank, 1994). According to Holzman and Hinz (2005), the financial stability that pension plans ought to have now and in the future is referred to as the pension system's sustainability. It has to do with a nation's overall economic output. The sustainable pension system should be able to pay beneficiaries as promised within the constraints of the overall economic output without resorting to unwarranted measures.

The economic literature has numerous concepts and approaches concerning the pension system's sustainability (Dedák & Fiser, 2024). The broad concept of sustainability includes financial stability, intergenerational equity, and the absence of sudden changes in the system's main parameters (Jedynak, 2018). Meanwhile, the limited idea of sustainability focuses solely on the pension plan's long-term fiscal balance. According to this approach, sustainability is the ability of a pension system to fulfill its long-term social and financial obligations without requiring external funding (OECD, 2012).

According to Whitehouse (2014), a commitment to ensuring that current contributions are equal to or greater than the current benefits constitute a sustainable pension system. The European Commission (2017) asserted that financial parity between responsibilities and income is a key component of sustainability in pension schemes. Hallmark (2016) highlighted three factors to ensure long-term sustainability: the consistency of program fund receipts, the program's contribution range, and the degree of funding shortfall. The Index 2024 assessed the sustainability of the pension system using a variety of indicators, including pension coverage, total assets, demographics, public spending, government debt, and economic growth. According to the European Commission (2017), the population, the ratio of employees to retirees in pension systems, and the fiscal balance between earnings and spending must all be considered when determining sustainability.

Furthermore, Christensen & Moore (2014) suggest that pension schemes should be financially viable and absorb only a small portion of a jurisdiction's budget. Pension

expenditures should never jeopardize a country's capacity to provide essential services or necessitate taxation levels that stifle economic progress. A pension system's sustainability depends on government accountability and balancing taxpayer expenses and benefits. Governments must apply reasonable assumptions and make payments to the plan to offer promised benefits indefinitely.

According to the European Commission (2010), countries' pension systems and policies vary greatly. All systems are vulnerable to risk and must adjust to long-term demographic and economic developments. The crucial thing for policymakers is to give consideration to the dangers involved and achieve a reasonable balance between sustainability and adequacy issues. Pension systems must be established to maintain long-term budgetary viability while delivering good benefits. Pension policy must ensure enough retirement earnings today and in the future. Measures must be implemented to guarantee that pensions, in conjunction with different sources of earnings and considering the country's unique situation, substitute a suitable portion of pre-retirement earnings and prevent old-age poverty.

Three often-used measures are IPD, transitional cost, and pension gap for measuring pension sustainability. The present value of pension rights and interests accrued by incumbents and retirees at the assessment point is the IPD. In contrast, the present value of all pension rights and interests accumulated by the insured population before the system transition is the transitional cost (Holzmann et al., 2001). Concepts of transitory cost and IPD are both based on stocks. IPD is ubiquitous in all significant economies (Holzmann et al., 2004).

Future spending projections based on today's policies and regulations may be summed up in one figure. It is the net present value of the obligations made for future pension expenditure. Most people refer to it as the "IPD". The IPD aims to demonstrate that pension obligations are a type of debt that shares some traits with standard public-sector debt, such as government bonds. However, unlike conventional debt, the implicit debt that builds up from pension commitments is not shown on the government's financial sheet. However, it can still set significant boundaries for fiscal policy. The IPD frequently exceeds the traditional definition of public debt (Palacios & Whitehouse, 2006).

Typically, we use a Gross Domestic Product (GDP)-to-pension spending comparison to assess the sustainability of pension systems. Nevertheless, the spending-to-GDP ratio provides only a small portion of the background information regarding the financial strain of CSP programs. Therefore, the ratio of pension spending to government income is a more precise measure of the budgetary pressure on CSP expenditure than the GDP ratio (Palacios & Whitehouse, 2006).

According to Dedák & Fiser (2024), there are three key variables of the PAYG pension scheme (the dependency ratio, the benefit ratio, and the contribution rate), and the evolution of these determines sustainability. The old-age dependency ratio is the number of people aged 65 or older per 100 working-age people, particularly those between 20 and 64. Migration, fertility, and mortality rates affect how the old-age-to-working-age ratios change over time. There will be more older populations and probably more retirees due to the OECD countries' sustained rise in life expectancy, which most analysts predict will continue (OECD, 2022).

The benefit ratio is the ratio of the average pension benefit to the average earnings for the entire economy. With universal coverage, the higher the benefit percentage, the more generous the public pension is (Chai & Kim, 2018). Factors other than the degree of indexation influence the benefit ratio's level. The benefit ratio is also impacted by the number of years spent in retirement, population growth rate, salary growth, and the RR (Dedák & Fiser, 2023).

In addition, pension indexation is a crucial component of pension systems. Since it is one of the factors influencing pension expenditures, the indexation mechanism significantly impacts the sustainability of the pension system. However, it is also significant from a social perspective because it essentially affects the standard of living that the elderly can attain compared to their active years (Broeders et al., 2014). The effects of indexation on pensions vary greatly depending on whether they are analyzed from the perspective of a single pensioner or as a whole, considering all pensioners. This divergence is crucial when analyzing the economic impacts of indexation from a social and pension system sustainability viewpoint (Dedák & Fiser, 2024).

2.3. Pension Reforms

Pension reform is required in different nations. Reforms might be explored in most advanced nations and a few emerging economies, especially when expected increases in age-related spending (health and pensions) are substantial over 2010-2030. The considerable expenditure on pensions in many developed and developing nations emphasizes that fiscal restructuring strategies must incorporate pension reforms, especially in countries with significant consolidation requirements (IMF, 2011).

Pension reforms were implemented slowly in several nations throughout the 1980s. With few exceptions, European nations have not decided whether to shift to an FF pension system or substantially modify their pension formula and eligibility standards (Herce, 2002). There are numerous parallels between long-term concerns and short-term issues that the European States

have attempted to solve through reforms. However, because each nation has a unique legacy, there is no universally applicable answer or one optimal pension plan that can be applied. The design must be customized to the distinct economic, social, and demographic characteristics of the target audience, and the effectiveness of the implementation has a significant impact on the outcomes. Different schemes and system designs were produced due to the country-specific requirements, resources, and preferences that sparked changes (European Commission, 2010).

Furthermore, countries with low retirement ages and high eligibility ratios may prioritize pension reform to enhance growth, mainly if the gap between increases in life expectancy and retirement age is quite large (IMF, 2011). Meanwhile, almost two-thirds of OECD nations utilize some automatic adjustment mechanism in their pension programs. Six countries have NDC plans, seven adapt retirement eligibility requirements to life expectancy, and six vary pension payments to reflect changes in life expectancy, demographic ratios, or salary bills (OECD, 2021).

Seven nations have a system in place for financial balance. However, these approaches can only partially address the problems the aging population poses for the pension system. They can lessen the need for governments to carry out impromptu interventions and participate in protracted rule-making talks. However, they cannot completely separate pension systems from political decision-making or put them on autopilot. It is positive news since governments must maintain the flexibility to modify their pension systems in exceptional circumstances and to changes in the labor market, health, and social issues (OECD, 2021).

In Hungary, the enormous modifications made to the pension system during the past ten years significantly altered all of the key components of the PAYG. Hungary's pension reform damaged the system's long-term sustainability and resulted in dismantling the social care system. The Hungarian situation illustrates how politicians can conceal the economy's weak performance using the pension system (Dedák & Fiser, 2023).

2.3.1. Principles of Pension Reform

According to (Barr, 2000), there are prerequisites for pension reform as described in table 3 below.

Table 3.

Prerequisites for Pension Reform.

Public Sector	Private Sector
Fiscal sustainability of state scheme	A sufficiently well-informed population
Political sustainability of pension reform package	Financial Assets
Administrative capacity to enforce taxes/contributions	Financial markets
Capacity to maintain macroeconomic stability	Adequate private sector capacity
Effective regulatory capacity	

Source: Barr, N., 2000.

Eatwell and others (2000) argue in Barr (2000), "It is obvious that there is no 'ideal' model for pension reform." However, they advised a country with a non-sustainable PAYG system to:

- Reduce generosity to pensioners;
- Development of a third pillar of voluntary private savings, preferably with tax breaks;
- The first pillar is reinforced and maintained as a separate entity with its purpose;
- A fully financed (FF) component is offered as a purely political, but legitimate, alternative."

Furthermore, Barr (2000) suggests a significant range of potential choices for pension design:

- The state pension should be optimized, not minimized.
- A state PAYG program, a state-organized funding program, a combination of state PAYG and privately supported programs, or almost entirely private institutions may manage consumption smoothing.
- Countries with mature PAYG systems that confront population aging should implement various strategies, such as increasing productivity and reducing the generosity of PAYG pensions, such as raising the retirement age.

- There are few alternatives available to countries with large, unsustainable PAYG systems: the only way to make the system viable is to lower benefits, raise contributions, or do both simultaneously.

There are various strains in the literature on changing the PAYG pension. The first strand investigates the decision to transition from an underfunded PAYG system to a funded pension scheme. The disadvantage of this solution is the significant expense faced by transitional generations who must finance both systems concurrently. The second strand of research analyzes three possible approaches for gradually ensuring the sustainability of PAYG schemes: altering the pension payout, modifying the contribution rate, or revising the retirement age. That literature frequently focuses on the selection of those three alternatives (and ideal mix) without closely examining the age and cohort-specific impacts of those pension schemes (Baurin & Hindriks, 2023).

2.3.2. Types of Pension Reforms

Pension reforms are offered in two forms: parametric reforms and systemic reforms. The latter are systemic improvements that take established systems "off path," whereas the former are gradual changes to the system's parameters (Hinrichs, 2021). A parametric reform is defined as changes in important parameters such as the replacement ratio, retirement age, contribution rate, and pension taxes. In contrast, a systemic reform is defined as a more extreme systemic reform of various pension plans. Systemic reforms are a response to the demand for risk diversification across many systems and the requirement to assess the whole framework for providing retirement income to achieve a fair balance between various sources of retirement income (European Commission, 2001). Parametric improvements can assist in decreasing labor market inefficiencies within the current systems and place future pension spending on a sustainable foundation (IMF, 2011).

Additionally, parametric reforms aim to maintain the fundamental components of the current system while seeking to impact the scheme's costs, finances, or incentive structures to make it more responsive to future situations. The division of pension reforms into parametric and systemic reforms is essential for explaining how different modifications could address present issues. Parametric reforms may be categorized based on the basic parameters of every pension system: the retirement age, replacement ratio, and contribution rate (European Commission, 2001). Generally, the steps that may be done to lower CSP obligations also apply

to national systems. It is highly probable that some "parametric reforms," irrespective of the kind of pension system, will lower pension liabilities (Palacios & Whitehouse, 2006).

Meanwhile, systemic reforms address the diversity of retirement income provision and the risks associated with various schemes. These reforms address issues, including the relative importance of basic income security, occupational activity-based retirement income (in both mandatory and optional programs), and income from private sources like capital gains, savings, and private pensions. Pension provision and its financing through various plans directly relate to systemic changes (European Commission, 2001).

Furthermore, systemic reforms by switching from PAYG to FF mean that current employees will pay for their funded pensions and the PAYG pensions of current retirees. This is frequently referred to as the "double burden" of transition. Even while the pension system is less expensive in the long run, it takes several years to realize the full benefits. It is a rather idealized example. The magnitude of the possible long-term benefits of switching to financing is disputed among economists (World Bank, 2005).

In the short to medium term, a financing gap is created by the switch from PAYG to FF. The process of passing on the IPD to each succeeding generation is terminated when financing is switched. As a result, some of the IPD is made clear. The explicit deficit of the government is increased (or the surplus is decreased) by the short-term transition cost. The transition burden must be overcome since most governments struggle to preserve budgetary restraint. However, realizing that the short-term transition cost may result in a long-term decrease in pension obligations does not require support for the proposed changes to public-sector accounting. It would strengthen the public sector's balance sheet (World Bank, 2005).

2.3.3. Pension Modeling

Reforming the pension system is a critical and timely issue in all nations. One essential tool for establishing pension policy is long-term evaluation. Pension policy can be disastrous without long-term estimates of system finances (World Bank, 2010). Therefore, pension systems need long-term government plans to be studied, simulated, and implemented (Szabo, 2017).

Pension system models are used to aid in designing a new pension system and reforming an existing one. Pension modeling may be used to forecast pension spending, investigate alternative financing methods, and examine the impact of the pension system on income distribution for both contributors and recipients (Cichon & Latulippe, 1997).

Pension modeling evaluates plans' long-term cash balances and consequently determines system sustainability. Pension modeling may also carefully analyze various policy innovations, alerting policymakers and the general public about the financial ramifications of change (World Bank, 2010).

Pension modeling is required to determine the future general pattern of pension expenditure. However, extensive modeling is also necessary since the change route necessitates a clear understanding of the effects of modifying the present and sometimes intricate pension arrangements (Herce, 2002).

Future economic conditions and the behavioral ramifications of changes in social policy are difficult to forecast. Therefore, the uncertainty in predictions grows as the projection period lengthens. As a result, models should be viewed as providing the analytical framework required for decision-making rather than delivering accurate data and simple conclusions. This means that they should produce consistent findings for various policy alternatives based on plausible assumptions that may be subjected to alternative scenarios to assess the sensitivity of the results and identify the primary factors of future financial development (Cichon & Latulippe, 1997).

Pension modeling has enabled us to forecast the future of pensions and the implications of measures to address it. It should be noted that the originality and analytical complexity of scholarly recommendations have yet to be verified against actual data and in-depth policy simulation in many nations, not just poor ones. Pension formulas are exact and tailored to nearly every human feature, making them challenging to model. If pension officials think the topic is politically sensitive, they may not give information or financial support (Herce, 2002).

Models for analyzing pension systems have been presented in recent studies. Kapteyn & Vos (2007) used model specifications to simulate the influence of three policy measures on retirement patterns and the benefits and taxes people pay beyond 50. They assess the fiscal impact of three potential changes, having modeled retirement transitions using micro data from the Netherlands Socio-Economic Panel (SEP). They discovered that the revisions would have significant (favorable) fiscal impacts. The Common Reform has the most powerful impacts, primarily mechanical rather than behavioral. The impact of the second change, which delays eligibility by three years, heavily depends on the retirement plan adopted. The Actuarial Reform has the least impact.

Fehr et al. (2012) examined the German pension reform, which raised the legal retirement age by two years. Three skill classes with different life expectancies, a natural demographic transition, and the option for people to choose their labor supply at sharp and extended margins are all included in the simulation model. According to the modeling results, long-run

contributions and old-age poverty rates will soar under the existing pension legislation. Effective retirement will be postponed by around a year due to the suggested rise in the normal retirement age and will be distributed among the following cohorts. A longer effective retirement date might result from increasing the benefits' actuarial adjustment.

A semi-Markov chain is suggested by D'Amico et al. (2019) to depict the pay scales of pension plan participants. The model aims to understand how active employees' pay has changed to include that information in developing the actuarial technical balance sheet. It is important to remember that the payments to a pension plan are directly correlated to the wages of the active workers; in almost all cases, they represent a percentage of the employee's income. Because all occupations and wages are susceptible to change due to digitalization, innovation, and other factors, it is imperative to develop an acceptable model of pay development to determine contributions made to the fund and, ultimately, the fund's viability. A sizable dataset of an entire first-pillar mandatory Italian pension program tests the model, investigating and assessing the semi-Markovian hypothesis's advantages over Markov chain models.

Baurin & Hindriks (2023) investigated the intergenerational effects of progressive pension adjustments. They used a micro-simulation method to compare various benefit modifications. Balancing the government budget may require progressively lowering pension payouts in an aging economy. They reached the effects of such progressive initiatives across cohorts. The indexation reform promotes generational equality since the phasing in over time has a more extensive base, allowing for fewer per capita benefit cuts. We then look at various measures that improve generational equality and see that they all fail to achieve majority support. Finally, they demonstrated that the indexation reform outperforms the accrual reform when considering labor incentives. Efficiency and generational equity are combined.

Furthermore, Herce (2002) claims that modeling pension systems is challenging and that certain concessions must be made. Unsurprisingly, academics must typically adequately represent this complexity in detail and behavior when creating overlapping generations or general equilibrium models. However, regarding macro results, these models successfully resolve challenges such as pension system sustainability.

Based on the work of Auerbach & Kotlikoff (1987), a wide range of models for numerous nations are now available. Academic researchers have primarily developed overlapping generations models, which integrate general equilibrium analysis with sustainability considerations, intergenerational well-being, and a restricted examination of pension reform alternatives. The OECD, the International Monetary Fund (IMF), and the European

Commission have general equilibrium models for analyzing public economic concerns. These models have also been developed for research into aging and pension difficulties (Herce, 2002).

However, when a thorough examination of the implications of specific ideas is required, certain concessions must be made. Overlapping generations models become unmanageable due to the extensive description of the pension system that must consider agent heterogeneity, pension regimes, contingencies, eligibility requirements, and formula parameters, necessitating the creation of new models. It usually applies to social security administrations, where incomplete models, ad hoc models, and actuarial approaches predict the possible outcomes of various ideas before they are enacted (Herce, 2002).

These accounting and actuarial models are often utilized in academic circles to analyze reform ideas or actual legislation issued by governments (Hviding & Mérette, 1998). The three models are GEM (general equilibrium (overlapping generations) models), AHA (ad-hoc actuarial models), and GAM (generational accounting models). Each model works better with a particular set of problems. Sustainability is simple to manage regardless of the methodology employed. However, creating a supermodel capable of dealing with various difficulties has been challenging (Herce, 2002).

2.4. Pension Systems in Indonesia

The structure of government employees' income or salaries must be understood in order to evaluate the Indonesian CSP system. This is because Indonesia's government employee salaries are based on a combination scale. One scale, referred to as the basic salary, pays employees in the same rank the same amount regardless of their job type or level of responsibility, while the other scale is based on the duties and responsibilities of the individual employee. Government Regulation Number 7 of 1977 divides Indonesian government officials into four ranks or levels: level I, which ranges from I/a to I/d; level II, which ranges from II/a to II/d; level III, which ranges from III/a to III/d; and level IV, which ranges from IV/a to IV/e.

According to Simanungkalit (2013) and Tjiptoherijanto (2018), corruption in Indonesia has historically been attributed to the low salaries. Simanungkalit (2013) states that the lowest-ranking government officers' base salary can only cover 54% of a family's expenses, including two adults and two children.

Tjiptoherijanto (2018) demonstrated that the basic compensation scale lacks the rank-by-rank diversity in the private sector. Standardized allowances, including family allowances, structural allowances (based on structural positions), functional allowances (based on

functional positions), and special allowances for government workers working in distant locations, comprise the second grade. As persons in special positions are more likely to engage in corrupt activities, Tjiptoherijanto (2018) contended that this scale was purposefully designed unequally, with a big gap, especially for functional jobs, to attract bright applicants to fill the roles and avoid corruption.

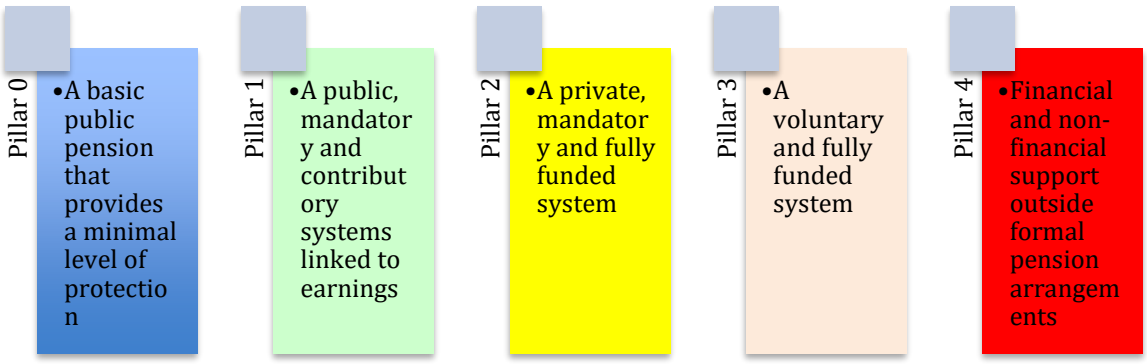
The second scale allows some agencies and local governments to provide their staff with more benefits (Simanungkalit, 2013). Although the private sector pays more for every degree of education, starting with a bachelor's degree and above, the average incomes in Indonesia's public sector are still greater than those in the private sector overall, but solely because of higher education levels (Tjiptoherijanto, 2018).

Additionally, starting in 2011, public workers in the ministries and institutions that have implemented bureaucratic reforms have been granted performance allowances under Presidential Regulation No. 81 of 2010 about the Grand Design of the 2010-2025 Bureaucracy Reform (Pertiwi & Fitrie, 2019). Performance Allowance is closely related to the Civil Servant Performance Assessment System, which is paid according to performance achievement. The performance allowance given to employees is a function of successfully implementing bureaucratic reform. It is based on the employee's performance achievement, which aligns with the performance achievement of the organization where the employee works.

Furthermore, the World Bank Pension Conceptual Framework (2008) introduced a multi-pillar pension system (the Five Pillars of the Pension System). As a type of state protection, the zero pillars constitute the most fundamental social security system. The first pillar is a mandated public pension system overseen by the state, with contributions based on retiree incomes. The second pillar is a fully funded pension system, the third is a voluntary DC pension system, and the fourth is a financial and non-financial pension system that supplements the existing pension system. It can be described in Figure 2.

Figure 2.

The World Bank's Pension Concept Framework.



Source: The World Bank Pension Conceptual Framework (2008)

The zero and the first pillar, which provide social security for all residents, still need to be implemented in Indonesia. To guarantee social security to all of its residents, Indonesia is still attempting to build a legally required public pension system. Even though Law Number 40 of 2004 was passed, Indonesia has not yet implemented a compulsory public pension system. It was a turning point for social security in Indonesia. Sadly, the objectives of the Indonesian government to secure residents by putting in place a social security system remain untested.

In Indonesia, compulsory pension systems for public servants, mandated company pension systems, and voluntary pension systems are currently in effect. The CSP System, State Officials Pension System, Military and Police Personnel Pension System, Civil Service Old-Age Savings System, and Military and Police Personnel Old-Age Savings System are the public pension plans that are required for government employees (Hadi et al., 2022). Nine million out of Indonesia's total 269 million are enrolled in these programs, or around 3.38 percent of the population (Annual report of PT Taspen, 2018; Annual report of PT Asabri, 2018).

2.4.1. CSP System

After Indonesia obtained independence in 1945, numerous laws and regulations were introduced to ensure civil service pensions, which were eventually expanded to include the military and police (Bakroh, 2024). Pension plans were made available to civil servants during the Dutch occupation era, and they were confirmed in 1956 when the President signed a bill

governing pension expenditures. Law No. 11/1969, which was published in 1969 and is now in force, changed the CSP regulations once again. Despite having differing legal bases, pension plans for civil servants and veterans are essentially the same. Law No. 11/1969 specifies pension plans for civil servants, whereas Law No. 6/1966 sets pensions for military personnel (Muliati, 2013).

The PAYG plan, based on the DB scheme, is used in the pension system for civil servants in Indonesia. Although Law Number 5 of 2014 regulates the power to manage the public service pension system, Law Number 11 of 1969 has been implemented since the implementing regulations in the form of Government Regulations have not yet been published. PT Taspen, a public company manages and organizes this initiative. Meanwhile, the old-age savings program for civil servants in Indonesia uses DC schemes. PT Taspen also runs and manages this program.

The pension and old-age savings schemes for police officers and military personnel are comparable to those for civil servants. The pension fund is where the distinction may be discovered. Under President Decree Number 8 of 1977, PT. ASABRI oversaw the pension and old-age savings programs for police and military personnel before they were initially controlled and structured by PT. Taspen (Hadi et al., 2022).

If a civil servant has worked for the government for at least twenty years and has attained the age of fifty in Indonesia, they are entitled to collect employee pension benefits. For state administrative officers, first functional officers, young functional officers, and skilled functional officers, the pension age is fifty-eight years; for high-chief officers and associate functional officers, it is sixty years; and for civil servants who are principal functional officers, it is sixty-five years (Hadi et al., 2022).

The employee's basic salary (including any supplementary basic salaries) for the previous month, as established by the applicable salary regulations, serves as the pension basis for calculating the pension benefit under Indonesia's CSP plan. The monthly pension benefit for employees is 2.5% of the basic pension for each term of service, provided that the monthly benefit for employees does not exceed 75% of the primary pension benefits (Hadi et al., 2022).

The formula for civil servants' pension benefits is as follows:

2.5% x Working Period (Years of service, maximum 30 years) x Pension Base (the last/final salary) (Maximum 75%, Minimum 40%)

In addition, the monthly widow/widower pension also represents 36% of the basic pension income. The widow/widower pension is equal to 72% of the principal pension payments if a government servant passes away while performing official duties. However, if a public servant passes away while on the job and is unmarried, the parent's pension equals 20% of the basic pension. The monthly payments given to Indonesia's CSP plan amount to 4.75 percent of each employee's monthly wage. On the other hand, the Indonesian government does not make a monthly contribution. When the due period for pension payments appears, they contribute to the Indonesian national budget (APBN).

For the Indonesian civil service old-age savings systems, participants of this program are civil servants. They cease to be members when they pass away or resign (Hadi et al., 2022). The benefits include life insurance for the Indonesian civil service old-age savings scheme and Dwiguna insurance. Dwiguna insurance is a valuable form that protects government officials while on the job. It offers retirement benefits if a civil servant is still alive when they retire and life insurance if they pass away while performing their duties. Meanwhile, life insurance programs protect civil servants and their families (Widjaja & Simanjuntak, 2010). Civil servants in Indonesia contribute 3.25 percent of their monthly salaries to their personal savings accounts for the country's old-age savings program (Hadi et al., 2022). Table 4 shows the summary of CSP system.

Table 4.

Summary of CSP System.

Pension Programs	Scheme	Pension age	Benefit	Contribution
CSP system	DB	58, 60 or 65 years based on the job position	• Civil servant: a maximum of 75% • Widow/widower: 36% • Widow/widower (civil servant dies while on duty): 72% • Child: 36% • Parent: 20%	Civil servants: 4.75%; The Indonesian government does not contribute monthly
Civil service old-age savings system	DC	Participants: civil servants. Their membership ends when pension, dies, or they resign	Lumpsum. The benefits include Dwiguna insurance and Life insurance	Civil servants: 3.25% of their monthly salary to their private savings accounts

Source: Hadi et al., 2022; Rokhim et al., 2022.

2.4.2. Old Savings/Lump Sum Private System

Since 1977, formal private sector employees have been members of a program that offers lump sum payments upon retirement. With the passage of Law No. 3/1992 on social security programs for workers, the plan was changed to a provident fund in 1992. The four programs are old-age savings, death benefits, work accident, and health insurance (Muliati, 2013). For private employees, the mandated private pension systems used a DC system. Law Number 24 of 2011 controls the authority to manage the compulsory private pension scheme. This initiative is managed and coordinated by BPJS Ketenagakerjaan (Labor) (Ananta et al., 2021).

The contributions are 5.7% of wages, with the following provisions: 2% is borne by the employee, and the employer bears 3.7%. The wages used as the basis for payment of

contributions are monthly wages. The monthly wages consist of basic wages and fixed allowances. If wages are paid daily, the monthly wages as the basis for payment of contributions are calculated from the daily wages multiplied by 25. If wages are paid in a lump sum or unit of output, the monthly wages as the basis for payment of contributions are calculated from the average wages for the last 3 months. If the work depends on weather conditions and the wages are based on lump sum wages, the monthly wages as the basis for payment of contributions are calculated from the average wages for the last 12 (twelve) months (Government Regulation Number 46 of 2015).

Old Savings benefits are paid in one lump sum in the form of cash paid if the participant is 56 years old, dies, or experiences permanent total disability. The amount of old savings benefits is the accumulated value of all contributions paid plus the results of their development recorded in the participant's account. To prepare for retirement, payment of old savings benefits may be given in part up to a certain limit if the participant has had a membership period of at least 10 (ten) years.

Withdrawal of old savings benefits up to a certain limit is a maximum of 30 percent of the pension old savings, which is allocated for home ownership or a maximum of 10 percent for other purposes by preparation for retirement. Withdrawal of old savings benefits may only be done 1 (one) time during the participant's tenure. BPJS Ketenagakerjaan (Labor) is required to provide information to participants regarding the amount of the old savings balance and its development results once every 1 year (Government Regulation Number 46 of 2015).

If the participant dies, the old savings benefits are given to the legal heirs. The heirs include a widow, widower, or child. If there are no widows, widowers or children, old savings are given in the following order: the worker's blood descent in a straight line up and down to the second degree; siblings; parents-in-law; and the party appointed in his will by the participant (Government Regulation Number 46 of 2015).

2.4.3. Mandatory Private Pension (MPP) System

The MPP systems for private employees in Indonesia use a DB system. Starting January 1, 2019, the retirement age for private company employees is 57. The subsequent retirement age increases by 1 (one) year for every 3 (three) years until reaching 65 (sixty-five) years. There are no differences between men and women. A participant who achieves retirement age before the 15-year contribution period is complete can collect all of his or her accrued contributions and the development outcomes.

Participants who change workplaces are required to notify their membership to the new employer of their new workplace by showing their membership card. The employer of the new workplace is required to continue the employee's membership by reporting the membership card and paying contributions to BPJS-Ketenagakerjaan (BPJS-Employment) as a pension fund from the time the employee works at the new employer of their new workplace (Government Regulation Number 45 of 2015).

Meanwhile, the pension benefits under Indonesia's MPP plan are computed by multiplying the weighted annual salaries throughout the contribution period by the indexation factor. The indexation factor is set at 1 (one) plus the general inflation rate of the previous year. The general inflation rate is the annual rate determined by the institution responsible for government affairs in statistics. Pension benefits are set at a minimum of IDR 300,000 (EUR 18,61), and the maximum is set at IDR 3,600,000 (EUR 222) for each month (Government Regulation Number 45 of 2015).

2.4.4. Voluntary Private Pension (VPP) System

A VPP system with a DC plan serves as the third pillar. The Indonesian government introduced Law Number 11 of 1992 to control VPP programs that private sector employers provide to their employees, offer individual pension funds, and underline the significance of VPP funds in supplying income for old age (Muliati, 2013). This optional program is managed and coordinated by Dana Pensiun Pemberi Kerja (DPPK—Employer's Pension Fund) and Dana Pensiun Lembaga Keuangan (DPLK—Financial Institution Pension Fund) (Ananta et al., 2021).

Workers of the sponsoring employer or a co-sponsor may be eligible for either DB or DC schemes under Government Regulation No. 76/1992 about DPPK. Government Regulation No. 77/1992 about Financial Institutions Pension Funds (FIPF or DPLK): These DC programs are available to self-employed individuals and employees who want to save for retirement through regulated and monitored tax-sheltered group vehicles provided by banks and insurance companies that have been approved. The business must seek legal authorization from the Ministry of Finance to establish an EPF or FIPF (Muliati, 2013).

3 MATERIALS AND METHODS

3.1. Research Design

This study utilizes a mixed-methods approach to collect and analyze data by examining the issue through quantitative (secondary data analysis) and qualitative (interviews) methods. According to Creswell & John (2018), mixed-methods research involves gathering quantitative and qualitative data, integrating these two data types, and employing various research designs that may encompass philosophical assumptions and theoretical frameworks. This study posits that combining qualitative and quantitative data can yield insights beyond what each data source can provide.

This research employs a mixed-methods approach for two primary reasons. First, it helps balance the strengths and weaknesses of surveys and interviews, enhancing the overall credibility of the research (Creswell & Plano, 2011; Bryman, 2016). While interviews facilitate an exploration of pensioners' and civil servants' opinions on pension systems in Indonesia, the limited number of participants may lead to a lack of representation of the broader civil servant population (Chmiliar, 2010).

The second advantage of a mixed-methods approach is that it "extends results beyond what can be achieved using a single method" (Grafton et al., 2011). While surveys provide valuable information about which groups are more likely to hold certain views, interviews delve deeper into individuals' perspectives. Therefore, in this study, a mixed-methods strategy yields more comprehensive answers to the research questions than could be achieved through a single methodology.

3.2. Data Sources and Data Collection

When discussing research methodologies, selecting appropriate data sources is crucial for the study. Based on the research objectives, this research identified two primary sources for data collection: interviews, and secondary data sources. This study gathered primary data through interviews to understand public employees' and pensioners' perspectives and concerns regarding the adequacy and sustainability of Indonesia's current CSP system and the planning for pension reform.

Interviews

This study employed an interview-based research approach. A qualitative method for collecting primary data, combined with participant observation, allowed the researcher to engage with individuals actively involved in pension reform activities. Interviews were conducted on three target groups: with civil service pensioners, civil servants, key representatives from the Ministry of Finance of the Republic of Indonesia, and a representative from the World Bank.

The interviews with civil service pensioners took place in Kapuas Regency, Central Kalimantan Province, Indonesia, from March to June 2024 (see Figure 3 for the location).

Figure 3.

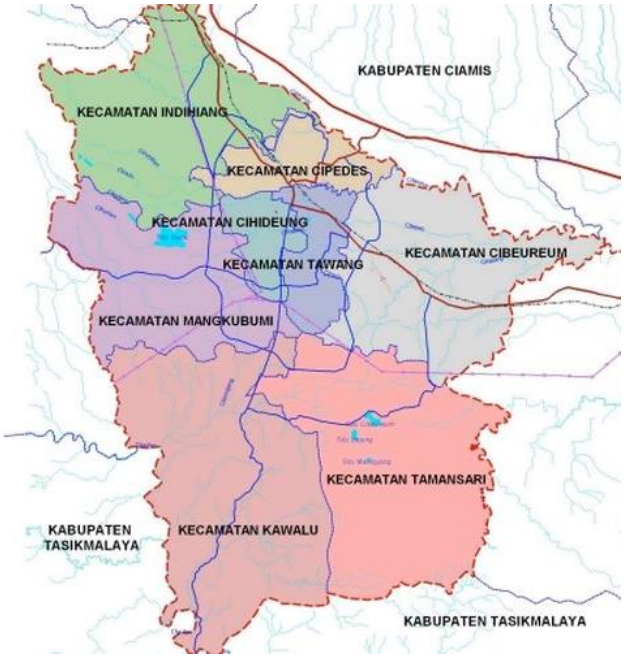
The Location of Case Study: Kapuas Regency.

Source: Hadi, A., Vidyattama, Y., Badriah, B., & Emese, P. (2024). Adequacy of the Pension System: A Qualitative Interview of Indonesian Civil Service Pensioners in Kapuas Regency. Economies, 12(12), 1-18. Article 328. https://doi.org/10.3390/economies12120328..

The interviews with civil service pensioners were also conducted in Tasikmalaya City, West Java Province, Indonesia, from October to December 2023 (see Figure 4).

Figure 4.

The Location of Case Study: Tasikmalaya City.



Source: https://regional.kompas.com/image/2022/03/28/224627678/profil-kota-tasikmalaya#

The researcher elected to use Kapuas regency as a case study because it is not a big regency. According to Table 5, the cost of living in Kapuas Regency is the lowest among the regencies in Central Kalimantan (BPS-Statistics Indonesia, 2023). Meanwhile, in West Java, Tasikmalaya City ranks third in population poverty, with 11.1 percent of its residents classified as poor (BPS-Statistics Indonesia, 2024).

Table 5.

Poverty Line Based on Regency/City in Kalimantan Tengah (Central Kalimantan).

Regency/City	Poverty Line Based on Regency/City (Rupiah/Capita/Month)					
	2020		2021		2022	2022
	IDR	EUR	IDR	EUR	IDR	EUR
Kotawaringin Barat	397,883	23.60	418,388	24.82	476,297	28.25
Kotawaringin Timur	446,039	26.46	467,551	27.73	510,290	30.27
Kapuas	332,999	19.75	345,272	20.48	424,066	25.15
Barito Selatan	433,787	25.73	450,706	26.73	481,352	28.55
Barito Utara	504,430	29.92	525,236	31.16	563,393	33.42
Sukamara	522,601	31.00	568,578	33.73	619,116	36.72
Lamandau	479,514	28.44	539,744	32.02	588,591	34.91
Seruyan	504,264	29.91	529,892	31.43	571,049	33.87
Katingan	474,056	28.12	498,487	29.57	553,082	32.81
Pulang Pisau	395,989	23.49	411,258	24.39	454,933	26.99
Gunung Mas	438,881	26.03	456,984	27.11	479,550	28.45
Barito Timur	517,183	30.68	534,896	31.73	571,786	33.92
Murung Raya	492,693	29.22	510,939	30.31	550,105	32.63
Palangka Raya	435,008	25.80	456,276	27.06	485,800	28.82
Kalimantan Tengah	**485,635**	**28.81**	**506,982**	**30.07**	**548,816**	**32.55**

Source: BPS-Statistics of East Kotawaringin. 2023. Garis Kemiskinan Menurut Kabupaten/Kota (Rupiah/Kapita/Bulan), 2020-2022.

The researcher selected civil service pensioners based on their grades and final positions prior to retirement. Eligible pensioners were contacted and encouraged to participate in the study. An interview protocol was implemented, with the specific interview questions listed in Appendix 1. Assurances were provided regarding ethical practices, including measures to maintain the anonymity and confidentiality of the interviewees. Notably, the researcher refrained from conducting group discussions during the interviews. During the sessions, the researcher focused on assessing the adequacy of the monthly pension payments received by retirees, inviting them to respond to the interview questions.

The researcher interviewed 20 civil service pensioners as part of this study. A total of fifteen semi-structured interviews—ten with men and five with women—were carried out in Kapuas Regency to identify and characterize the diverse opinions and attitudes among pensioners regarding the adequacy of CSP plans. Among the interviewees, eight were classified as level IV, five as level III, and two as level II.

The interviewing process and its instruments received approval from the National Research and Innovation Agency (NRIA) Ethics Committee on Social Studies and Humanities, with clearance letter Number 213/KE.01/SK/03/2024 (see Appendix 9). Additionally, five

exploratory, semi-structured interviews were held in Tasikmalaya City to evaluate the adequacy of CSP plans, involving one female and four male participants. Of these interviewees, one was categorized as level III, while four were categorized as level IV.

Secondly, the researcher interviewed 14 Indonesian civil servants from various positions and grades online from July to September 2024. During these interviews, participants were asked about the adequacy of the CSP scheme and the Indonesian government's reform plans. Additionally, civil servants were invited to respond to specific interview questions.

Finally, online semi-structured interviews have been conducted with key figures from the Ministry of Finance of the Republic of Indonesia and a World Bank representative. The researcher inquired about the adequacy, sustainability, and pension reform related to the CSP scheme. On October 30, 2024, the researcher interviewed Didik Kusnaini, the Director of Budget Regulation Harmonization at the Directorate General of Budget within the Ministry of Finance. Additionally, the researcher interviewed Robert Palacios, a Lead Economist at the World Bank, on November 7, 2024.

In summary, the researcher collected primary data as described in Table 6 below.

Table 6.

Primary Data Collection.

Participants	Time	Data collection mode	Sample size
Interview			
Civil service pensioners	March-June 2024 October to December 2023	Face to face	Kapuas regency 15 Tasikmalaya 5
Civil servants	July-September 2024	Online	14
Leading actors	November 2024	Online	2

Source: Author's work

Secondary data

Secondary data is the foundational information gathered to provide comprehensive details for implementing the CSP system in Indonesia. Since the CSP system is derived from government policy, official government documents are the primary sources deemed relevant and legitimate. For instance, examining the multi-level governance structure reveals that the primary documents generated are the laws and regulations enacted by governments at various

levels. Some government documents may also contain crucial information on advancing public pension policy. This information and the relevant documents have been collected from several government agencies, such as the Ministry of Finance, the NCSA, PT Taspen, and the World Bank Report for the Indonesian government.

In October 2023, the researcher sent a letter to the NCSA requesting detailed data on civil servants based on their grade and rank. This letter can be found in Appendix 12. The researcher also updated the most recent statistics on civil servants as of 2024, available for download on the NCSA website. Concerning the data on civil service pensioners, the researcher contacted PT Taspen in July 2024 and sent a letter requesting information; this letter is included in Appendix 13.

After gathering secondary data, the researcher conducted a simulation to reform the CSP system, primarily focusing on ensuring financial sustainability. The simulation aimed to explore a policy scenario that addresses the research questions related to this reform. Specifically, the simulation sought to answer several key research questions: "How high are the risks of the unsustainability of the current CSP system?", "How can a more sustainable pension system be designed, and what is the cost?", "What are the benefits of the new pension system and what are the risks of achieving them?" and "Can Indonesia afford to reform its public pension system considering the cost and benefit of reform with the various risk scenarios?" Therefore, to develop a model for the pension simulation, the researcher took into account three significant elements as outlined by Herce (2002):

- Sustainability Issues: The objective is to examine the system's revenue, spending, and overall balance over a sufficiently long period. It is important to assess the significance of the government's pension liabilities. Over the long run, what will the contributions and benefits look like? Will the system remain viable and sustainable in the long term?
- Effects of Modifying System Rules: This research will also analyze the impact of modifying system rules, such as eligibility requirements or parameters of the pension formula. What would occur if the benefits or contribution rates were changed? How will different reforms and modifications affect costs and liabilities? A comprehensive overview of the pension system is necessary, including information on the age distribution of contributors and beneficiaries.
- Adequacy of Civil Service Pensioners': As the Indonesian government considers transitioning the CSP system from a PAYG model to a funded pension system, it is essential to evaluate whether the new arrangement will provide civil service pensioners with adequate and comfortable pension benefits.

The research questions will be examined further using a condensed mathematical model based on macroeconomic and microeconomic variables. Given that the pension system for Indonesia's civil servants is PAYG, the following is a condensed mathematical model of the PAYG system (Simonovits, 2003; Banyár, 2016):

Number of civil servants x Pension contribution rate x Average annual salary = Number of pensioners x Yearly average pension

3.3. Profile of Interviewees

This section presents the demographic characteristics of interviewees, including gender, age, education, and job tenure. Table 7 displays the demographic profile of interviewees (civil service pensioners) from Kapuas Regency and Tasikmalaya City. The predominant group among the interviewees consisted of individuals aged 61 to 65. Retired male civil servants represented the majority, comprising over 50% of the participants in this study. Most interviewees held a bachelor's degree, with 47% in Kapuas Regency and 100% in Tasikmalaya City. Regarding marital status, nearly all of the interviewees were married. In Kapuas Regency, 80% of the interviewees were married, while this figure rose to 100% in Tasikmalaya City. Furthermore, there was a relatively high proportion of interviewees with more than three children, accounting for 40% in Kapuas Regency and 60% in Tasikmalaya City.

Table 7.

The Demographic Profile of Interviewed Civil Service Pensioners.

Category	Criteria	Kapuas		Tasikmalaya	
		Number	%	Number	%
Age	55 - 60 years	4	27%	0	0
	61 - 65 years	4	27%	4	80%
	66 - 70 years	2	13%	1	20%
	71 - 75 years	3	20%	0	0
	> 75 years	2	13%	0	0
Gender	Male	10	67%	4	80%
	Female	5	33%	1	20%
Education	Senior High School or below	6	40%	0	0
	Undergraduate	7	47%	5	100%
	Master/Graduate	2	13%	0	0
	Doctoral	0	0%	0	0
Marital status	Single	0	0%	0	0
	Married	12	80%	5	100%
	Widowed	3	20%	0	0
	Divorced	0	0%	0	0
Number of children	0	1	7%	0	0
	1	0	0%	0	0
	2	2	13%	2	40%
	3	6	40%	0	0
	> 3	6	40%	3	60%

Source: Author’s work

Meanwhile, Table 8 provides an overview of the profiles of the civil servant interviewees. Most of the interviewees were between 31 and 40 years old. More than 50% of the participants were male. A significant majority, 57.1%, held a master's degree. All of the interviewees were married. About 50% of them had worked as civil servants for 11 to 20 years. While the interviewees had various occupations, the most common role was a human resource analyst, which comprised 28.57% of the participants.

Table 8.

The Demographic Profile of Interviewed Civil Servants.

Category	Criteria	Indonesia	
		Number	%
Age	21 - 30 years	1	7%
	31 - 40 years	6	43%
	41 - 50 years	5	36%
	51 - 60 years	2	14%
Gender	Male	10	71%
	Female	4	29%
Education	Senior High School or below	0	0
	Undergraduate	6	42.9%
	Master/Graduate	8	57.1%
	Doctoral	0	0
Marital status	Single	0	0
	Married	14	100%
	Widowed	0	0
	Divorced	0	0
Length of service	0 - 10 years	4	29%
	11 - 20 years	7	50%
	21 - 30 years	1	7%
	31 - 40 years	2	14%
Job positions	Echelon 2	1	7.14%
	Echelon 4	3	21.43%
	Lecturer	1	7.14%
	System analyst	1	7.14%
	Human resource management auditor	2	14.29%
	Human resource analyst	4	28.57%
	Drafter of Legislative Regulations	2	14.29%

Source: Author's work

4 RESULTS AND DISCUSSION

4.1. Adequacy of the Indonesian CSP System

This section of the analysis answers the question: “How is the adequacy of the current Indonesian CSP system?”

The researcher measures the adequacy of the Indonesian CSP system based on references from the literature review, assessing several factors such as benefits, RR, and home ownership. This evaluation is supported by a Lead Economist at the World Bank, who stated: "Generally, formal sector workers with a full career of contributions or service do not have issues with the absolute amount of their pension. Our focus will be on the RR for these individuals. In the case of a social pension, a non-contributory pension aimed at preventing poverty, we address different considerations. In that context, we look at absolute numbers and how they compare to the poverty line. However, when discussing the CSP scheme, our emphasis is less on these absolute measures and more on the RR" (Appendix 8).

Therefore, the RR of pension benefits was used as the primary approach to assess the adequacy of the CSP scheme. The RR is calculated by dividing the individual's pension benefit by net pre-retirement earnings (take-home pay (THP)). According to Table 9, the RR of the interviewees ranges from 44% to 60% of their THP. Notably, all 20 respondents had an RR greater than 40%, which aligns with the recommendations of the ILO. Based on ILO criteria, the existing pension system provides a suitable income replacement for government officials in Indonesia, allowing them to achieve a decent standard of living after retirement and serving as recognition for their contributions. It is worth mentioning that the THP reflected in Table 9 does not include the regional performance allowance since the respondents retired before implementing the regional performance allowance rule.

Table 9.

Pension Benefits Compared to Basic Salary, THP, and RR.

No.	Code	Grade	Basic Salary (IDR)	EUR	Total Allowance (IDR)	EUR	THP (IDR)	EUR	Pension Benefits (IDR)	EUR	RR
1	N	IV/e	6,373,200	378.04	4,431,928	262.89	10,805,128	640.93	4,779,900	283.53	44.24%
2	F	IV/a	4,483,100	265.92	1,457,314	86.44	5,940,414	352.37	2,846,700	168.86	47.92%
3	L	II/d	3,877,500	230.00	1,372,530	81.41	5,250,030	311.42	2,909,300	172.57	55.41%
4	M	IV/c	5,687,200	337.35	1,810,888	107.42	7,498,088	444.76	4,272,600	253.44	56.98%
5	H	III/a	4,435,500	263.10	1,400,650	83.08	5,836,150	346.18	3,331,300	197.60	57.08%
6	G	III/b	4,623,200	274.23	1,426,928	84.64	6,050,128	358.88	3,477,100	206.25	57.47%
7	K	III/b	4,623,200	274.23	1,426,928	84.64	6,050,128	358.88	3,477,100	206.25	57.47%
8	A	III/d	5,022,500	297.92	1,532,830	90.92	6,555,330	388.84	3,772,100	223.75	57.54%
9	B	IV/a	5,235,000	310.52	1,562,580	92.69	6,797,580	403.21	3,936,800	233.52	57.91%
10	D	IV/a	5,235,000	310.52	1,562,580	92.69	6,797,580	403.21	3,936,800	233.52	57.91%
11	C	IV/a	5,399,900	320.31	1,585,666	94.06	6,985,566	414.36	4,050,000	240.23	57.98%
12	J	III/d	5,180,700	307.30	1,403,978	83.28	6,584,678	390.58	3,885,600	230.48	59.01%
13	I	IV/b	5,456,400	323.66	1,442,576	85.57	6,898,976	409.23	4,093,300	242.80	59.33%
14	O	II/d	3,877,500	230.00	1,012,530	60.06	4,890,030	290.06	2,909,300	172.57	59.49%
15	E	IV/b	5,628,300	333.85	1,466,642	87.00	7,094,942	420.85	4,221,300	250.39	59.50%
16	P	IV/b	5,456,400	323.66	1,563,576	92.75	7,019,976	416.40	3,908,200	231.82	55.67%
17	Q	III/c	4,671,600	277.11	1,128,704	66.95	5,800,304	344.06	3,219,600	190.98	55.51%
18	R	IV/c	5,687,200	337.35	1,595,888	94.66	7,283,088	432.01	3,956,200	234.67	54.32%
19	S	IV/c	5,687,200	337.35	1,595,888	94.66	7,283,088	432.01	3,956,200	234.67	54.32%
20	T	IV/b	5,456,400	323.66	1,563,576	92.75	7,019,976	416.40	3,908,200	231.82	55.67%

Sources: Government Regulation Number 5 Year (2024), Government Regulation Number 8 Year (2024), Presidential Decree Number 26 for the Year 2007, Presidential Decree Number 12 for the Year 2006.

I also asked the interviewees how well their CSP benefits supported their advanced needs, such as entertainment and travel, and their basic needs, such as food and housing. It was to gather information regarding the adequacy of these benefits. Table 10 indicates that all interviewees believed their pension payments would cover their basic needs. A CSP can help individuals avoid poverty if it allows them to meet their essential requirements. However, 80% of the respondents (16 out of 20) mentioned that their pensions only met their basic needs. Among the 20 interviewees, only four reported that their pensions addressed ongoing or advanced needs. Interestingly, despite being of different genders, two members from the Kapuas regency had the highest RR at almost 59% of their wages, while sharing the same job

grade before retirement. Although they both held level IV positions, which is not the highest rank, their benefits placed them in the upper half of all respondents.

Table 10.

Perception of Interviewees about Financial Needs.

No.	Code	Gender	Grade	Pension Benefits (IDR)	EUR	RR	Financial Needs
1	F*	Female	IV/a	2,846,700	168.86	47.92%	Basic
2	L*	Male	II/d	2,909,300	172.57	55.41%	Basic
3	O*	Male	II/d	2,909,300	172.57	59.49%	Basic
4	H	Male	III/a	3,331,300	197.60	57.08%	Basic
5	G	Female	III/b	3,477,100	206.25	57.47%	Basic
6	K	Male	III/b	3,477,100	206.25	57.47%	Basic
7	A	Female	III/d	3,772,100	223.75	57.54%	Basic
8	J	Male	III/d	3,885,600	230.48	59.01%	Basic
9	B	Male	IV/a	3,936,800	233.52	57.91%	Basic
10	D	Male	IV/a	3,936,800	233.52	57.91%	Basic
11	C	Male	IV/a	4,050,000	240.23	57.98%	Basic
12	I	Male	IV/b	4,093,300	242.80	59.33%	Continuous/Advanced
13	E	Female	IV/b	4,221,300	250.39	59.50%	Continuous/Advanced
14	M	Female	IV/c	4,272,600	253.44	56.98%	Basic
15	N	Male	IV/e	4,779,900	283.53	44.24%	Basic
16	P	Male	IV/b	3,908,200	231.82	55.67%	Basic
17	Q	Male	III/c	3,219,600	190.98	55.51%	Basic
18	R	Male	IV/c	3,956,200	234.67	54.32%	Continuous/Advanced
19	S	Female	IV/c	3,956,200	234.67	54.32%	Continuous/Advanced
20	T	Male	IV/b	3,908,200	231.82	55.67%	Basic

Source: Author's work

The interviewees discussed their quality of life before retirement and their reactions to the current pension situation. It was found that their expenses varied significantly prior to retirement. To manage their finances post-retirement, most male and female respondents anticipated an income loss and planned accordingly. One female interviewee, who reported a RR of 56%, stated, "My monthly pension is enough for daily needs." However, she recognized that her pension would not be sufficient for more significant expenses, saying, "But if I got sick and had no personal savings, that would be tough." It highlights that even though her RR exceeded the recommended 40%, the potential income decrease needed to be accounted for.

Another female respondent, with an RR of 47.92%, attributed her situation to low overall compensation, especially her base salary. Her pension payments amounted to only IDR 2,846,700, below the Kapuas Regency minimum wage of IDR 3,261,700. She remarked, "I have to be minimalist with my needs because my pension is too low. Nonetheless, a small pension is better than none at all. I am generally satisfied with my life."

The consumption-smoothing behaviors of several male interviewees were also recorded. One interviewee added, "Even though my salary was low, I planned my pension when I worked as a civil servant and saved a certain money to give myself a better life," to the previously mentioned statement about saving. "We should save what we earn to afford a better pension life, but that is unlikely with a low salary," said another male participant. The question of how much the pension benefit might support the members' current expenses also raised the problem of low salaries. Most respondents stated they could only meet 25% of their monthly expenses, even if the RR exceeded the 40% ILO level. It indicates that their prior salary did not cover their expenses.

Although they are more likely to reach RR objectives, level I and II pensioners have insufficient working-life income before and after retirement. The state income provided by the CSP plan benefit is more likely to be relied upon by low-income pensioners (levels I and II). They are unlikely to have as many options to turn their wealth into revenue or to cut costs, like real estate-related ones.

The highest level of pensioners (IV/e) enjoy a "comfortable" quality of life while employed, particularly because they are granted a specific structural position. They acknowledge that because they will have a low RR, this group of pensioners finds it challenging to maintain a comparable level of life in retirement. They will not be able to continue living at the same level as before they retired.

One interviewee with a comparatively substantial pre-retirement income was more concerned with the things they would have to part with than their pre-retirement savings plan. As a result, pensioners could have additional sources of revenue to supplement their retirement income. To be able to pay for their monthly costs, one of the recently retired interviewees disclosed that they worked for a private company, saying, "My pension benefit is insufficient; it only covers less than 25% of the monthly cost. As a consequence, I currently work for a private corporation." Some interviewees still had bank loans during retirement since their income did not cover the expenditures from when they became civil servants.

These loans can also be seen as another attempt to smooth their consumption by depending on more than just pension benefits. The necessity of regularly supporting other

family members financially, as shown in the statement, "I have to support my family every month, although only a small amount," may also impact this smoothing. It is a crucial factor, as most aged pensions operate under the assumption that they will not have any dependent children in their families (Tanton et al., 2009).

According to the European Commission (2018), pensions are not the only financial support people rely on as they age. Many people accumulate wealth (including via home ownership) during their working lives (European Commission 2018). Although we found that several pensioners had savings, as shown above, the low income of civil servants makes saving difficult. One form of relief for our interviewees in Kapuas Regency was that they owned homes.

According to Table 11, nearly all the pensioners (17 of the 20 interviewees) lived in their own houses. They probably bought their houses when working as civil servants for the government. As in studies such as those by Saunders & Wong (2011) and Jacques et al. (2021), 3 of the 20 interviewees who had not secured home ownership thought it was impossible to do so under their current conditions. Previously, two struggled to buy a house as single parents, while another one sold his home to cover his health problems in the past, stating, "I had a house before, but I had to sell it because of an accident a few years ago. Now, I do not have money to buy a new one". Another member from this group stated, "Since I do not have a house, I have to arrange my pension for house rent payment. So, the pension benefit is not enough". One interviewee indicated that the issue of housing is a crucial element if the government wants to reform the system: "Agree if the government will reform the pension system because some pensioners still do not have a living house (unwealthy)."

Table 11.

Home Ownership of Interviewees.

No.	Code	Gender	Grade	Pension Benefits (IDR)	EUR	Home Ownership	
						Before Retiring	After Retiring
1	F	Female	IV/a	2,846,700	168.86	Yes	Yes
2	L	Male	II/d	2,909,300	172.57	Yes	Yes
3	O	Male	II/d	2,909,300	172.57	Yes	Yes
4	H *	Male	III/a	3,331,300	197.60	Yes	No
5	G *	Female	III/b	3,477,100	206.25	Yes	No
6	K	Male	III/b	3,477,100	206.25	Yes	Yes
7	A *	Female	III/d	3,772,100	223.75	Yes	No
8	J	Male	III/d	3,885,600	230.48	Yes	Yes
9	B	Male	IV/a	3,936,800	233.52	Yes	Yes
10	D	Male	IV/a	3,936,800	233.52	Yes	Yes
11	C	Male	IV/a	4,050,000	240.23	Yes	Yes
12	I	Male	IV/b	4,093,300	242.80	Yes	Yes
13	E	Female	IV/b	4,221,300	250.39	Yes	Yes
14	M	Female	IV/c	4,272,600	253.44	Yes	Yes
15	N	Male	IV/e	4,779,900	283.53	Yes	Yes
16	P	Male	IV/b	3,908,200	231.82	Yes	Yes
17	Q	Male	III/c	3,219,600	190.98	Yes	Yes
18	R	Male	IV/c	3,956,200	234.67	Yes	Yes
19	S	Female	IV/c	3,956,200	234.67	Yes	Yes
20	T	Male	IV/b	3,908,200	231.82	Yes	Yes

Source: Author's work

Furthermore, the researcher asked the civil servant interviewees regarding the adequacy of the current pension benefits. Based on the interview, not all civil servants know the CSP system, particularly the adequacy of CSP benefits. One of the interviewees who works as a Lecturer said, "I do not have the slightest idea what the current amount/benefits of civil servant pensioners are. I do not know if it is because I am not actively looking for information or because of a lack of socialization. I think it is important to disseminate knowledge like this to civil servants from the beginning as a civil servant, so they can think about better plans for the future when they enter retirement. In my opinion, it is crucial to facilitate the implementation of programs that can facilitate pensioner productivity beyond just providing pension money."

According to the interview, 13 out of 14 interviewees believe that the current amount of CSP benefits is still inadequate to meet the needs of a decent living. The system analyst interviewee argued that "It will not be enough because costs and prices of necessities continue to increase every year." "Especially retirees who live in big cities," added an Echelon 4 interviewee. Meanwhile, a human resource analyst interviewee believes the amount of pension

benefits is only for daily living expenses. Meanwhile, one of the interviewees who served as a drafter of the legislation thought that "many retirees feel that the amount of pension they receive is insufficient to maintain a decent lifestyle after retirement. It is especially true for those with family responsibilities or high health needs."

A human resource auditor interviewee highlighted pensions based on levels and a sharp decline in income. He believed the pension benefit is still normative, depending on the rank and position of the civil servants while active. For those civil servants in the lower middle class, the current pension amount may be quite competitive. However, for middle to upper-class employees/positions, there is still a gap in conditions before and after active duty, with a sharp decline in income. Other interviewees, a senior civil servant working as an Echelon 2 in Yogyakarta, and a young female personnel analyst, have similar opinions on whether it is adequate or inadequate relative to each person.

A personnel analyst interviewee said:" Lifestyle factors, living environment, and needs also have an influence. However, for civil servants in several agencies, when they are active, the highest component of their income comes from performance allowances, not their basic salary. Meanwhile, the basis for calculating pensions is from the basic salary; therefore, there will be a decrease in income when you retire. So, adjustments need to be made when transitioning from active to retired." Meanwhile, Echelon 2 argues:" It depends on lifestyle factors and the environment where you live and your needs also have an influence. Besides that, the current pension benefits value is not based on the applicable US $ Rates. So, what is received today is very different from what was received 20 years ago with the same amount but a different value."

Finally, an interviewee who was about to enter retirement said: "The value of pension adequacy is very relative, depending on the pattern and lifestyle of the person concerned in making a scale of priorities in fulfilling their living needs and desires, but in general, if you calculate the current cost of living with the amount of civil servant pension benefits from the lowest to the highest range. This amount of pension benefits can only cover the basic needs that absolutely must be met first for survival, such as food, clothing, shelter, health services, and education. Meanwhile, fulfilling secondary needs is relatively less affordable, especially fulfilling tertiary needs (luxury) is very far from reach. Especially for pensioners who were previously active because their position had a high salary and various allowances, then when they retire, along with a decrease in income, they will feel a significant difference, especially in lifestyle patterns and lifestyles that require extra adjustments. Therefore, in essence, the current amount of pension benefits only covers primary needs, and only a small part can cover

secondary needs, and it is quite difficult to reach tertiary (luxury) needs if you do not have other sources of income."

4.2. Sustainability of the Indonesian CSP System.

This part of the analysis answers the question: "How high are the risks of the unsustainability of the current CSP system?"

4.2.1. Sustainability of the Current CSP System.

Between 2017 and 2020, there was an increase in the payment of pension benefits. This rise can be attributed to several factors: (1) an increase in the number of pension benefit recipients; (2) an increase in the basic pension in 2019; and (3) the policy of providing holiday allowances (tunjangan hari raya) to pensioners since 2018 (APBN, 2022). According to the APBN (2021), contributions to pension benefits amounted to IDR 128,740.5 billion. In 2022, the contribution to pension benefit payments reached IDR 136,355.7 billion, reflecting a 5.9 percent increase compared to the outlook for 2021 (APBN, 2022). Pension benefit payments in 2023 totaled IDR 142,730.8 billion, an increase of 4.6 percent compared to the 2022 outlook. This rise in pension benefit payments corresponds with the growing number of pensioners (APBN, 2023).

For 2024, the planned allocation for pension benefit payments is IDR 146,514.3 billion, representing an increase of 2.7 percent compared to the outlook for 2023. While there is a consistent nominal increase in pension benefit payments each year, the pension burden as a percentage of GDP has remained stable or even decreased (APBN, 2024). The Director of Budget Regulation Harmonization supports this observation at the Ministry of Finance, who stated, "There are no problems with the sustainability of the CSP system in terms of its comparison with GDP" (Appendix 7). This statement is further validated by the data comparing CSP expenditures to Indonesia's GDP, as shown in Table 12 below. According to Table 12, pension spending is projected to be around EUR 8.627 billion in 2024.

Table 12.

Pension Spending Compared to GDP, Government Income, and Employee Budget[1].

	Budget Year			
Description	**2021**	**2022**	**2023**	**2024**
Pension Spending	IDR 128.7 trillion (EUR 7.58 billion)	IDR 136.3 trillion (EUR 8.03 billion)	IDR142 trillion (EUR 8.405 billion)	IDR 146,5 trillion (EUR 8.627 billion)
GDP	USD 1.18 *trillion* (EUR 1,13 trillion)	USD 1.32 trillion (EUR 1,25 trillion)	USD 1.37 trillion (EUR 1.306 trillion)	USD 1.368 trillion (EUR 1.303 trillion)
Government Income	IDR 1,743 trillion (EUR 102.67 billion)	IDR 1,840 trillion (EUR 108.4 billion)	IDR 2,443 trillion (EUR 143.9 billion)	IDR 2,802 trillion (EUR 165 billion)
Taxes	IDR 1,444.5 trillion (EUR 85.06 billion)	IDR 1,506.9 trillion (EUR 88.73 billion)	IDR 2,016.9 trillion (EUR 118.77 billion)	IDR 2,309.9 trillion (EUR 136 billion)
Employee Budget	IDR 387.75 trillion (EUR 22.8 billion)	IDR 402.44 trillion (EUR 23.69 billion)	IDR 432.45 trillion (EUR 25.46 billion)	IDR 481.42 trillion (EUR 28.35 billion)
Percentage (GDP)	0.67%	0.64%	0.64%	0.66%
Percentage (Income)	7.38%	7.4%	5.8%	5.2%
Percentage (Taxes)	8.9%	9.04%	7.07%	6.3%
Percentage (Employee Budget)	33.2%	33.8%	33%	30.4%

Source: (APBN, 2021-2024), (World Bank Data, 2025), (BPS Statistics, 2025)

[1] Employee budget is the budget allocation of Indonesian government in APBN (Indonesian National Budget) for paying the compensation in the form of money or goods given to civil servants, state officials, and retirees as well as honorary employees who will be appointed as government employees as compensation for work that has been carried out in order to support the tasks and functions of government organizational units (Regulation of the Minister of Finance Number 102/PMK.02/2018 of 2018 concerning Budget Classification).

The Lead Economist of the World Bank agreed with the director of budgeting regulation harmonization from the Ministry of Finance, stating: "The spending on the CSP scheme is not higher than that of other countries in the region. While it is likely to increase due to demographic factors, it is not excessively high." However, he noted that "as a percentage of government revenue, it is quite significant. Although it is not an outlier when considering GDP, it is substantial when viewed as a percentage of revenue. I would recommend focusing on revenue as the denominator" (Appendix 8).

Based on the APBN, we can analyze how pension spending compares to government income, specifically tax revenue, as detailed in Table 12. Pension spending accounts for approximately 6-8% of government income, while taxes range from 6-9%. Although these percentages remain below 10%, Indonesia must adequately enhance its revenue to cover expenditures, particularly pension spending. The Lead Economist from the World Bank emphasized this point: "The problem with Indonesia is primarily on the revenue side. Indonesia collects less tax than other countries with a comparable income level, and there is significant room for improvement" (Appendix 8).

Furthermore, we can also compare the pension spending to the employee's budget based on the data from APBN in Table 12. Although the percentage of pension spending is not significantly high compared to GDP and government revenue, the director of budget regulations harmonization at the Ministry of Finance stated that there are no concerns regarding the sustainability of the CSP system compared to the allocation for employee spending in the APBN. However, it is important to note that the percentage of pension spending is relatively high, at around 30%, compared to the employees' budget, as outlined in Table 12.

4.2.2. The Long-term Pension Sustainability

Based on the data of current pensioners from PT. Taspen and the data of civil servants from the NCSA, the researcher forecasts the amount of pension spending on CSP benefits in the future.

Formula/Forecasting Model

As previously stated, the mathematical model for Indonesia's CSP system is based on intergenerational linkage, where pension expenditures (pensioners' benefits) are financed by pension revenue (contributions from the active population). Contributions will equal pension payments if the pension plan is financially balanced. Therefore, the fundamental equation of

the well-known PAYG system can be expressed as follows (Barr, 2000; Börsch-Supan et al., 2016; Dedák & Fiser, 2024):

$$\tau(t)C(t)S(t) = B(t)P(t) \quad (1)$$

where:

τ: contribution rate

C: the number of civil servants

S: average salary of civil servants

B: average pension benefit

P: the number of pensioners

t: time

Therefore, the model of pension revenues is in the following:

$$PR(n) = CS(n) \times CR(n) \times AS(n) \quad (2)$$

where:

PR(n) represents the pension revenues collected in the year of n,

CS(n) represents the number of CS in year n,

CR(n) is the contribution rate in year n

AS(n) represents the average annual salary for CS

Meanwhile, the model of pension expenditure is as follows:

$$PE(n) = P(n) \times AP(n) \quad (3)$$

where:

PE(n) represents the pension expenditure in year n,

P(n) represents the number of CS pensioners in year n,

AP(n) represents the yearly average pension rate.

Therefore, the model of the yearly pension gap is as follow: PG(n) = PR(n)−PE(n) where PG(n) stands for pension gap in year n. When PG(n) < 0, it indicates that there is a pension gap in

year t, and the amount of the pension gap equals −PG(n); when PG(t) ≥ 0, it indicates that there is no gap in year n.

The Assumptions

To calculate the pension gap, it is necessary to set assumptions that include the growth of the number of civil servants, the growth of civil service pensioners, an assumption of an increase in take-home pay (base salary, performance allowance), a retirement age limit, and calculating pension benefits 14 times a year. According to NCSA (2023), the number of civil servants in Indonesia is around 3,795,302. According to NCSA (2024) statistics, civil servants have been declining yearly since 2015. Therefore, the researcher assumed the growth number of civil servants would be zero in this calculation. Meanwhile, salary increases are based on the average salary growth from previous years, as shown in Table 13 below.

Table 13.

Growth of Civil Servants' Salary.

Year	Percentage
2013	7%
2014	6%
2015	5%
2016	0%
2017	0%
2018	0%
2019	5%
2020	0%
2021	0%
2022	0%
2023	0%
2024	8%
Average	2.58%

Source: https://www.cnbcindonesia.com/research/20230817110131-128-463813/perbandingan-kenaikan-gaji-pns-era-jokowi-vs-sby-jauh-banget.

In more detail, the assumptions used in the calculations of pension benefits are as follows:

Table 14.

Assumptions for Pension Benefits Calculations.

No.	Components	Assumption
1.	Growth of the number of Civil Servants	zero rate
2.	Growth of Civil Service Pensioners	2%
3.	Salary increases	2.5% yearly
4.	Basic pension/Pension base	the last/final salary
5.	Civil servants' contribution rate	4.75%
6.	Accrual rate	2.5%
7.	Pension payment	14 months in a year

Source: Author's work

Calculation Result

According to Table 15, monthly pension payouts are expected to increase significantly from around IDR 10.596 trillion in 2026 to IDR 93.766 trillion by 2075, or a 7.85 times increase. On the other hand, monthly pension contributions increase at a significantly slower rate, rising from IDR 0.654 trillion to IDR 2.195 trillion (or about a 235% increase). Put otherwise, benefit payments increase at a rate that is almost three times higher than contributions. Total pension spending increases from IDR 148.352 trillion in 2026 to IDR 1,312.718 trillion in 2075 annually, while annual contributions increase from IDR 7.854 trillion to IDR 26.336 trillion. As a result, the disparity between inflows and outflows significantly increases.

By 2075, the pension gap—defined as annual benefits minus contributions—is projected to reach IDR 1,286.381 trillion, which represents a growth of 9.16 times from a starting point of approximately IDR 140.498 trillion in 2026. The difference between benefits and contributions, expressed as a percentage of contributions, decreases from 1,788.9% in 2026 to 4,884.5% in 2075. In 2026, contributions will cover only 5.29% of benefits, but by 2075, this coverage will drop to just 2.00%. This coverage ratio is illustrated in the "PR/PE" column of the table (where contributions are divided by benefits). This negative amortization, where payouts significantly exceed contributions, cannot continue indefinitely. Fiscal sustainability

is threatened as the unfunded liability (the gap) must be compensated through other sources, such as debt and the general budget, especially as contributions fall short of projections.

Demographic changes are a significant driver of these trends. The number of pensioners is expected to double, rising from approximately 2.97 million in 2026 to about 7.84 million by 2075—a 2.64 times increase, or a 2.0% annual growth rate. Meanwhile, the contributor base, composed of civil servants, will remain constant at around 3.795 million. This situation leads to a dramatic reduction in the number of employees supporting each retiree.

Regarding salaries, average salaries are anticipated to increase from about IDR 4.75 million to approximately IDR 15.94 million (a 3.35 times increase). At the same time, the basic salary used for contributions will rise from roughly IDR 3.63 million to about IDR 12.17 million (also a 3.35 times increase). Consequently, while the expansion of the contribution base relies entirely on these salary increases, retirees' pensions will grow in line with the increasing number and higher average benefits. As a result, there will be a structural imbalance, where the growth of benefits (4.5–5% annually) significantly outpaces the increase in contributions (2.5%). This situation raises concerns among experts that the pension system may become overwhelmed by the rising costs of pension payments, especially as fewer employees support a growing number of pensioners.

The deficit as a percentage of contributions nearly triples, while the absolute gap grows from IDR 140 trillion to IDR 1,286 trillion. There is a clear tipping point: by the 2040s, yearly benefit expenditures will surpass contributions by more than 20 times, and this trend will continue to increase. There is a constant increase in the deficit rather than a reversal in any given year. This pattern indicates high fiscal risk and unsustainability at current rates. When unfunded liabilities increase uncontrolled, the system is underfunded and "going broke," as numerous studies have observed.

According to Table 15, contributions fall behind benefits by an increasing amount—a classic example of negative amortization. The financial burden will become intolerable without reforms (increasing contribution rates, expanding the workforce, cutting benefits, or introducing more funds). Since the government does not pay pension contributions regularly, the government will pay pension benefits (expenditure) directly by the APBN based on Government Regulation Number 25 of 1981, as amended by Government Regulation Number 20 of 2013 concerning Civil Servant Social Insurance. Meanwhile, the pension revenue (contribution) will go directly to PT Taspen as a pension fund to be invested. However, the Indonesian government should regularly contribute to ensure the long-term sustainability of the civil servants' pension system. It is important to carefully examine a rate equivalent to the

civil servants' contribution, or about 10% of their pay. According to Table 15, the hypothesis of this research, "H1: Increasing contribution rates positively impacts improving the long-term sustainability of the Indonesian CSP system," can be accepted. The Indonesian government should fund the program immediately to lower the unfunded liabilities.

According to the World Bank Lead Economist, "This pension liability is a real liability and it is growing, and to the extent that it is a burden on the future generation. Then we should look at that combined with the public debt, but they do not take into account this unfunded pension liability, which can be very large. So, I think, it would be good to not accumulate very large unfunded pension liabilities" (Appendix 8).

In summary, the existing CSP system is associated with significant long-term risks. Therefore, the CSP programs in the medium and long term could pose risks if program reforms are not designed carefully, which can have a direct impact on the APBN. Also, most civil servants are in the 40–60 age range (NCSA, 2024), and the pension program will become a burden in several years. Therefore, appropriate policies would be necessary to prevent substantial pressure on the government budget.

Table 15.

Prediction of Pension Gap of CSP Expenditure.

Working Year	Year	Accrual Rate	Year of Service	Last Salary (Average)	Pensioners	Contribution Rate	Civil Servants	Basic Salary (Average)	Monthly Pension Expenditure (Benefits)	Annual Pension Expenditure (Benefits)	Monthly Pension Contribution (MPC)	Annual Pension Contribution (APC)	Pension Gap		PR/PE
													IDR	In percent of APC	
Year 0	2026	2.5%	30	4,753,950	2,972,006	4.75%	3,795,302	3,630,455	10,596,574,587,899	148,352,044,230,589	654,486,914,725	7,853,842,976,694	140,498,201,253,895	1788.91%	5.29%
Year 1	2027	2.5%	30	4,872,799	3,031,446	4.75%	3,795,302	3,721,216	11,078,718,731,649	155,102,062,243,081	670,849,087,593	8,050,189,051,111	147,051,873,191,970	1826.69%	5.19%
Year 2	2028	2.5%	30	4,994,619	3,092,075	4.75%	3,795,302	3,814,246	11,582,800,433,939	162,159,206,075,142	687,620,314,782	8,251,443,777,389	153,907,762,297,752	1865.22%	5.09%
Year 3	2029	2.5%	30	5,119,484	3,153,916	4.75%	3,795,302	3,909,603	12,109,817,853,683	169,537,449,951,560	704,810,822,652	8,457,729,871,824	161,079,720,079,737	1904.53%	4.99%
Year 4	2030	2.5%	30	5,247,471	3,216,994	4.75%	3,795,302	4,007,343	12,660,814,566,026	177,251,403,924,356	722,431,093,218	8,669,173,118,619	168,582,230,805,737	1944.62%	4.89%
Year 5	2031	2.5%	30	5,378,658	3,281,334	4.75%	3,795,302	4,107,526	13,236,881,628,780	185,316,342,802,915	740,491,870,549	8,885,902,446,585	176,430,440,356,330	1985.51%	4.79%
Year 6	2032	2.5%	30	5,513,125	3,346,961	4.75%	3,795,302	4,210,214	13,839,159,742,889	193,748,236,400,447	759,004,167,312	9,108,050,007,750	184,640,186,392,698	2027.22%	4.70%
Year 7	2033	2.5%	30	5,650,953	3,413,900	4.75%	3,795,302	4,315,470	14,468,841,511,191	202,563,781,156,668	777,979,271,495	9,335,751,257,943	193,228,029,898,724	2069.76%	4.61%
Year 8	2034	2.5%	30	5,792,226	3,482,178	4.75%	3,795,302	4,423,356	15,127,173,799,950	211,780,433,199,296	797,428,753,283	9,569,145,039,392	202,211,288,159,904	2113.16%	4.52%
Year 9	2035	2.5%	30	5,937,032	3,551,822	4.75%	3,795,302	4,533,940	15,815,460,207,847	221,416,442,909,864	817,364,472,115	9,808,373,665,377	211,608,069,244,487	2157.42%	4.43%
Year 10	2036	2.5%	30	6,085,458	3,622,858	4.75%	3,795,302	4,647,289	16,535,063,647,305	231,490,891,062,263	837,798,583,918	10,053,583,007,011	221,437,308,055,252	2202.57%	4.34%
Year 11	2037	2.5%	30	6,237,594	3,695,315	4.75%	3,795,302	4,763,471	17,287,409,043,257	242,023,726,605,596	858,743,548,516	10,304,922,582,186	231,718,804,023,409	2248.62%	4.26%
Year 12	2038	2.5%	30	6,393,534	3,769,222	4.75%	3,795,302	4,882,558	18,073,986,154,725	253,035,806,166,150	880,212,137,228	10,562,545,646,741	242,473,260,519,409	2295.59%	4.17%
Year 13	2039	2.5%	30	6,553,373	3,844,606	4.75%	3,795,302	5,004,622	18,896,352,524,765	264,548,935,346,710	902,217,440,659	10,826,609,287,910	253,722,326,058,801	2343.51%	4.09%
Year 14	2040	2.5%	30	6,717,207	3,921,498	4.75%	3,795,302	5,129,737	19,756,136,564,642	276,585,911,904,985	924,772,876,676	11,097,274,520,107	265,488,637,384,878	2392.38%	4.01%
Year 15	2041	2.5%	30	6,885,137	3,999,928	4.75%	3,795,302	5,257,981	20,655,040,778,333	289,170,570,896,662	947,892,198,593	11,374,706,383,110	277,795,864,513,552	2442.22%	3.93%
Year 16	2042	2.5%	30	7,057,265	4,079,927	4.75%	3,795,302	5,389,430	21,594,845,133,747	302,327,831,872,460	971,589,503,557	11,659,074,042,688	290,668,757,829,773	2493.07%	3.86%
Year 17	2043	2.5%	30	7,233,697	4,161,525	4.75%	3,795,302	5,524,166	22,577,410,587,333	316,083,748,222,657	995,879,241,146	11,950,550,893,755	304,133,197,328,902	2544.93%	3.78%
Year 18	2044	2.5%	30	7,414,540	4,244,756	4.75%	3,795,302	5,662,270	23,604,682,769,056	330,465,558,766,788	1,020,776,222,175	12,249,314,666,099	318,216,244,100,689	2597.83%	3.71%
Year 19	2045	2.5%	30	7,599,903	4,329,651	4.75%	3,795,302	5,803,827	24,678,695,835,048	345,501,741,690,677	1,046,295,627,729	12,555,547,532,751	332,946,194,157,926	2651.79%	3.63%
Year 20	2046	2.5%	30	7,789,901	4,416,244	4.75%	3,795,302	5,948,923	25,801,576,495,543	361,222,070,937,603	1,072,453,018,423	12,869,436,221,070	348,352,634,716,533	2706.82%	3.56%
Year 21	2047	2.5%	30	7,984,648	4,504,569	4.75%	3,795,302	6,097,646	26,975,548,226,090	377,657,675,165,264	1,099,264,343,883	13,191,172,126,597	364,466,503,038,667	2762.96%	3.49%
Year 22	2048	2.5%	30	8,184,264	4,594,660	4.75%	3,795,302	6,250,087	28,202,935,670,377	394,841,099,385,283	1,126,745,952,480	13,520,951,429,762	381,320,147,955,522	2820.22%	3.42%
Year 23	2049	2.5%	30	8,388,871	4,686,553	4.75%	3,795,302	6,406,339	29,486,169,243,380	412,806,369,407,314	1,154,914,601,292	13,858,975,215,506	398,947,394,191,808	2878.62%	3.36%
Year 24	2050	2.5%	30	8,598,593	4,780,285	4.75%	3,795,302	6,566,498	30,827,789,943,953	431,589,059,215,346	1,183,787,466,324	14,205,449,595,893	417,383,609,619,453	2938.19%	3.29%
Year 25	2051	2.5%	30	8,813,558	4,875,890	4.75%	3,795,302	6,730,660	32,230,454,386,403	451,226,361,409,645	1,213,382,152,983	14,560,585,835,791	436,665,775,573,854	2998.96%	3.23%
Year 26	2052	2.5%	30	9,033,896	4,973,408	4.75%	3,795,302	6,898,927	33,696,940,060,985	471,757,160,853,784	1,243,716,706,807	14,924,600,481,686	456,832,560,372,098	3060.94%	3.16%
Year 27	2053	2.5%	30	9,259,744	5,072,876	4.75%	3,795,302	7,071,400	35,230,150,833,759	493,222,111,672,631	1,274,809,624,477	15,297,715,493,728	477,924,396,178,903	3124.16%	3.10%
Year 28	2054	2.5%	30	9,491,237	5,174,334	4.75%	3,795,302	7,248,185	36,833,122,696,695	515,663,717,753,735	1,306,679,865,089	15,680,158,381,071	499,983,559,372,665	3188.64%	3.04%
Year 29	2055	2.5%	30	9,728,518	5,277,820	4.75%	3,795,302	7,429,389	38,509,029,779,395	539,126,416,911,531	1,339,346,861,716	16,072,162,340,598	523,054,254,570,933	3254.41%	2.98%
Year 30	2056	2.5%	30	9,971,731	5,383,377	4.75%	3,795,302	7,615,124	40,261,190,634,358	563,656,668,881,005	1,372,830,533,259	16,473,966,399,113	547,182,702,481,893	3321.50%	2.92%
Year 31	2057	2.5%	30	10,221,025	5,491,044	4.75%	3,795,302	7,805,502	42,093,074,808,221	589,303,047,315,091	1,407,151,296,591	16,885,815,559,090	572,417,231,756,001	3389.93%	2.87%
Year 32	2058	2.5%	30	10,476,550	5,600,865	4.75%	3,795,302	8,000,640	44,008,309,711,995	616,116,335,967,928	1,442,330,079,006	17,307,960,948,068	598,808,375,019,860	3459.73%	2.81%
Year 33	2059	2.5%	30	10,738,464	5,712,883	4.75%	3,795,302	8,200,656	46,010,687,803,891	644,149,629,254,468	1,478,388,330,981	17,740,659,971,769	626,408,969,282,699	3530.92%	2.75%
Year 34	2060	2.5%	30	11,006,926	5,827,140	4.75%	3,795,302	8,405,672	48,104,174,098,968	673,458,437,385,547	1,515,348,039,255	18,184,176,471,064	655,274,260,914,483	3603.54%	2.70%
Year 35	2061	2.5%	30	11,282,099	5,943,683	4.75%	3,795,302	8,615,814	50,292,914,020,471	704,100,796,286,589	1,553,231,740,237	18,638,780,882,840	685,462,015,403,749	3677.61%	2.65%
Year 36	2062	2.5%	30	11,564,151	6,062,557	4.75%	3,795,302	8,831,209	52,581,241,608,402	736,137,382,517,629	1,592,062,533,743	19,104,750,404,911	717,032,632,112,718	3753.16%	2.60%
Year 37	2063	2.5%	30	11,853,255	6,183,808	4.75%	3,795,302	9,051,989	54,973,688,101,584	769,631,633,422,181	1,631,864,097,086	19,582,369,165,034	750,049,264,257,147	3830.23%	2.54%
Year 38	2064	2.5%	30	12,149,586	6,307,484	4.75%	3,795,302	9,278,289	57,474,990,910,206	804,649,872,742,890	1,672,660,699,513	20,071,928,394,160	784,577,944,348,730	3908.83%	2.49%
Year 39	2065	2.5%	30	12,453,326	6,433,634	4.75%	3,795,302	9,510,246	60,090,102,996,621	841,261,441,952,692	1,714,477,217,001	20,573,726,604,014	820,687,715,348,678	3989.01%	2.45%
Year 40	2066	2.5%	30	12,764,659	6,562,306	4.75%	3,795,302	9,748,003	62,824,202,682,967	879,538,837,561,539	1,757,339,147,426	21,088,069,769,114	858,450,767,792,425	4070.79%	2.40%
Year 41	2067	2.5%	30	13,083,776	6,693,552	4.75%	3,795,302	9,991,703	65,682,703,905,042	919,557,854,670,589	1,801,272,626,112	21,615,271,513,342	897,942,583,157,247	4154.20%	2.35%
Year 42	2068	2.5%	30	13,410,870	6,827,423	4.75%	3,795,302	10,241,495	68,671,266,932,722	961,397,737,058,101	1,846,304,441,765	22,155,653,301,176	939,242,083,756,925	4239.29%	2.30%
Year 43	2069	2.5%	30	13,746,142	6,963,972	4.75%	3,795,302	10,497,533	71,795,809,578,160	1,005,141,334,094,240	1,892,462,052,809	22,709,544,633,705	982,431,789,460,539	4326.07%	2.26%
Year 44	2070	2.5%	30	14,089,795	7,103,251	4.75%	3,795,302	10,759,971	75,062,518,913,967	1,050,875,264,795,530	1,939,773,604,129	23,277,283,249,548	1,027,597,981,545,980	4414.60%	2.22%
Year 45	2071	2.5%	30	14,442,040	7,245,316	4.75%	3,795,302	11,028,970	78,477,863,524,552	1,098,690,089,343,730	1,988,267,944,232	23,859,215,330,786	1,074,830,874,012,940	4504.89%	2.17%
Year 46	2072	2.5%	30	14,803,091	7,390,223	4.75%	3,795,302	11,304,694	82,048,606,314,919	1,148,680,488,408,870	2,037,974,642,838	24,455,695,714,056	1,124,224,792,694,810	4596.99%	2.13%
Year 47	2073	2.5%	30	15,173,169	7,538,027	4.75%	3,795,302	11,587,312	85,781,817,902,248	1,200,945,450,631,470	2,088,924,008,909	25,067,088,106,907	1,175,878,362,524,570	4690.93%	2.09%
Year 48	2074	2.5%	30	15,552,498	7,688,788	4.75%	3,795,302	11,876,995	89,684,890,616,800	1,255,588,468,635,200	2,141,147,109,132	25,693,765,309,580	1,229,894,703,325,620	4786.74%	2.05%
Year 49	2075	2.5%	30	15,941,310	7,842,563	4.75%	3,795,302	12,173,919	93,765,553,139,865	1,312,717,743,958,110	2,194,675,786,860	26,336,109,442,320	1,286,381,634,515,790	4884.48%	2.01%

Source: Author's work

Notes:

1. The last salary is the last or final salary of civil servants before retirement, usually the last month's salary before retirement for calculating the pension benefits.
2. The basic salary is the money received by active civil servants for their time working in a government institution. Its amount is determined based on the civil servants' rank or class.

4.2.3. Sensitivity Analysis

The previous calculations are determined on the baseline assumptions. However, modifying actuarial assumptions may result in different pension gap results. In this section, the researcher applies sensitivity analysis[2] to assess how modifying actuarial assumptions affects forecast outcomes.

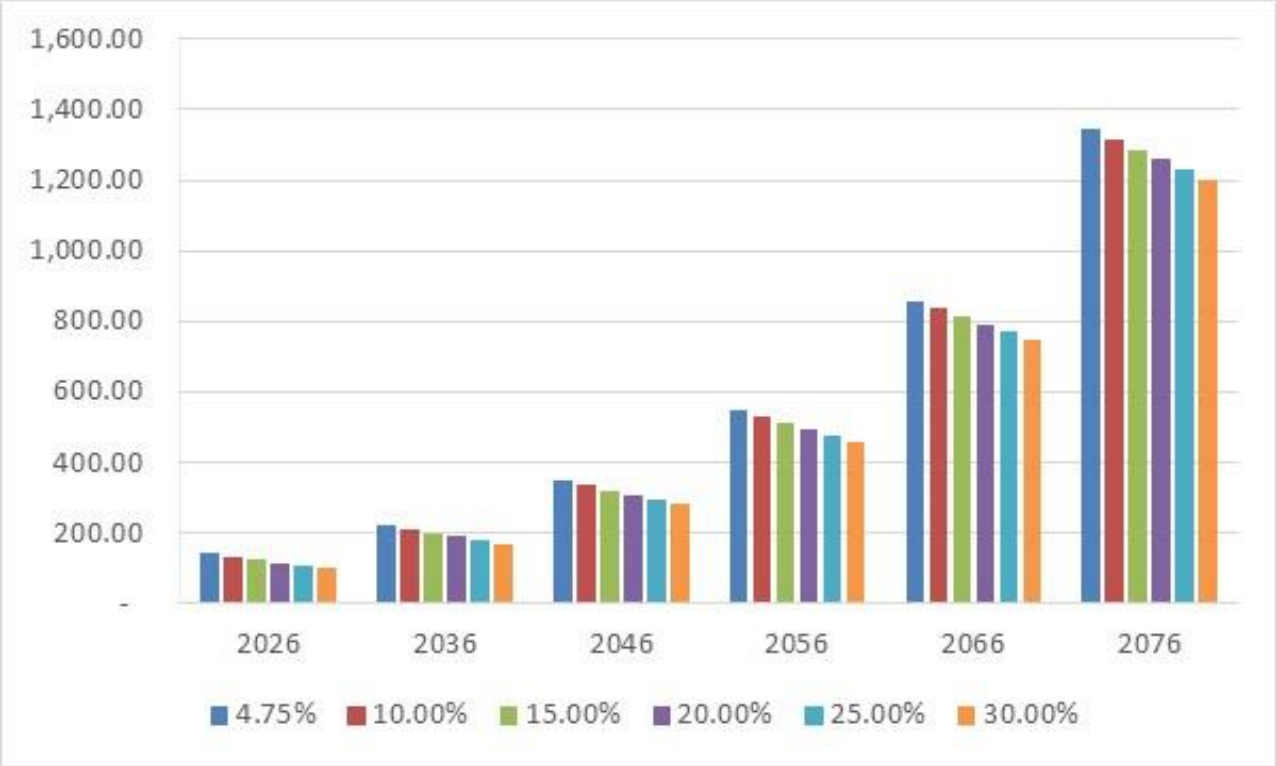
Sensitivity analysis on the contribution rate

The researcher simulated a sensitivity analysis to predict the pension gap of CSP expenditure with higher contribution rates than the current contribution rate of 4.75%. As illustrated in Figure 5, the future pension gap decreases if the contribution rate increases compared to the earlier estimate in Table 15 above. Figure 5 shows that from 2026 to 2076, the increased contribution rate is expected to reduce the pension deficit compared to the baseline scenario. This pattern is explained by greater contribution rates enhancing pension revenue, resulting in a smaller pension gap.

[2] Sensitivity analysis uses various methods to quantify how the uncertainty in a model's output is connected to the uncertainty in its inputs. Therefore, it allows us to analyze the robustness of numerical findings concerning input parameters, which is a precondition for making economic predictions from them ((Salciccioli, 2016); (Hermeling & Mennel, 2008).

Figure 5.

Pension Gap with Increase Contribution Rate (In Trillion IDR).[3]



Source: Author's work

According to Figure 5, the CSP system is unsustainable in all contribution rate scenarios examined. At a 30% contribution rate, the shortfall is IDR 1,201 trillion by 2076. It indicates that increased contributions are lower rather than erasing the pension gap. The CSP system is still not fully funded since increasing contribution rates by six times (from 4.75% to 30%) only decreases the long-term shortfall by around 11% (from 1,345 trillion to 1,202 trillion IDR).

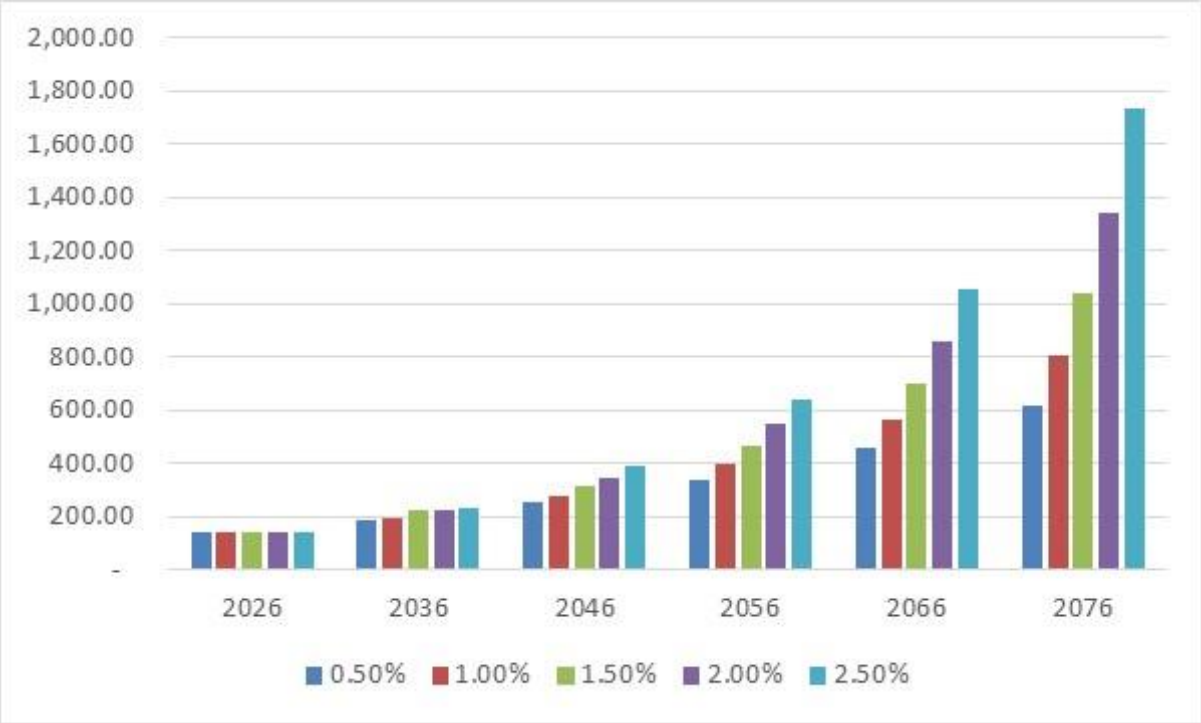
Sensitivity analysis on the retirement age

The Indonesian government is considering extending the legal retirement age as a policy option to ensure pension sustainability. However, this strategy has political challenges. In recent years, the notion of gradually postponing retirement age has entered the government's agenda, but the plan was quickly abandoned due to intense public and social media backlash. Considering the rising trend of life expectancy and longevity risk in Indonesia, I simulated the change in the pension gap when the legal retirement age is steadily raised in the future.

[3] For more detailed calculations, please refer to Appendix 5.

In this simulation, the researcher sets the growth of civil service pensioners between 0.5% and 2.5% by assuming the government will increase the minimum retirement age from 58 to 60 years old. The intention is to simulate the long-term effects of slower versus faster rises in retirement age on the pension gap. In this case, a greater pensioner growth rate means larger pension payouts and a slower rise in the retirement age, which causes more individuals to retire earlier. In contrast, a lower pensioner growth rate results in fewer new pensioners years and smaller pension payouts since the retirement age rises faster.

Figure 6.
Pension Gap with Increase Retirement Age (In Trillion IDR).[4]



Source: Author's work

According to Figure 6, if the legal retirement age is prolonged further (the growth of civil service pensioners below 2%), the pension gap will be less than that of the baseline scenario (2%) in 2026, 2036, 2046, 2056, 2066 and 2076, assuming all other parameters remain constant. Figure 6 shows that the pension gap grows significantly as the number of pensioners rises. Every ten years, pension liabilities increase by billions of rupiah when the retirement age is delayed, and the long-term sustainability of the pension system is significantly enhanced by raising the minimum retirement age faster (lower pensioner growth rate).

[4] For more detailed calculations, please refer to Appendix 5.

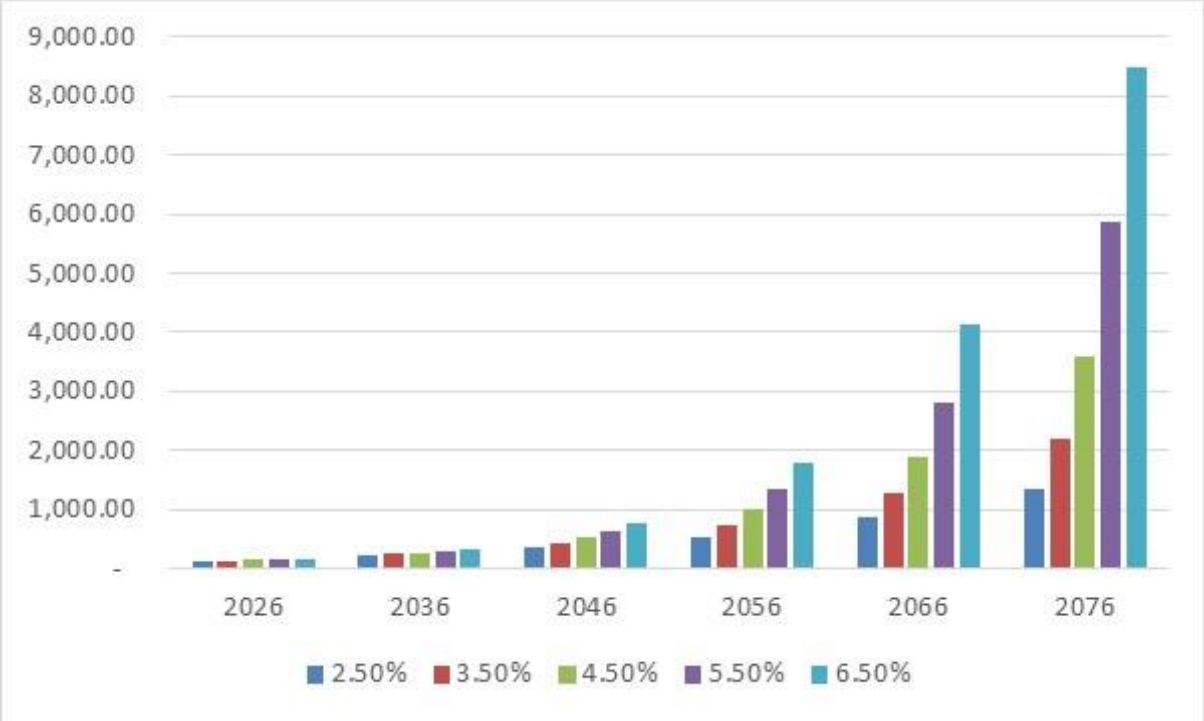
In terms of causality, increasing the retirement age implies increasing the number of contributors and decreasing the number of pensioners simultaneously, resulting in increased pension revenue and decreased pension expenditures, narrowing the pension gap. Therefore, the hypothesis of this research, "H2: Increasing retirement age positively impacts improving the long-term sustainability of the Indonesian CSP system," can be accepted. In summary, one of the most important factors in pension reform is the growth rate of pensioners. By 2076, the difference in reform acceleration of even 1% (1.5% versus 2.5%) is greater by more than 690 trillion rupiah. It is advised that retirement age reform be implemented immediately to reduce future pension liabilities.

Sensitivity analysis on the salary growth

To improve the welfare of civil servants, the Indonesian government typically considers increasing their salaries, albeit this is not implemented every year, but rather depends on the budgetary capacity of the Indonesian budget. However, as previously stated, according to the regulations, increasing civil servants' salaries immediately increases civil service pensioners' pension benefits. As a result, in this analysis, the researcher simulated how much the salary rise of civil servants affects the pension gap of the CSP system.

Figure 7.

Pension Gap with Increase Salary Growth (In Trillion IDR).[5]



Source: Author's work

According to Figure 7, higher salary growth significantly increases the pension gap. In 2076, the pension shortfall will be IDR 8,468 trillion, assuming a 6.5% wage growth rate. It is more than six times greater than 1,345 trillion at a 2.5% pay increase. In the CSP system, pension benefits depend on final salary; hence, better income growth results in larger final salary and yearly payouts. The contribution rate is constant (4.75%); hence, the gap between contributions and benefits expands dramatically.

The system is susceptible to salary growth assumptions. A slight increase in growth rate (e.g., 1%) results in an exponential increase in future pension gaps. For instance, in 2076, the margin between 5.5% and 6.5% rises from around 5.9 quadrillion to around 8.5 quadrillion, representing a 44% increase in only one point. The CSP system is particularly vulnerable to salary inflation risk. The CSP system will be severely underfunded without indexing payments to wage growth or modifying benefit calculations. Even aggressive increases in contribution rates may not be sufficient to keep up with significant pay growth. Therefore, according to this calculation, the hypothesis of this research, "H3: Increasing civil servants' salary negatively

[5] For more detailed calculations, please refer to Appendix 5.

impacts improving the long-term sustainability of the Indonesian CSP system," can be accepted.

4.3. Designing and Modelling a Sustainable Indonesian CSP System

This part of the analysis answers the question: "How can a more sustainable pension system be designed, and what is the cost?"

Considering the increasing burden on the APBN with the PAYG scheme, which impacts the sustainability of the CSP scheme, and also the adequacy of the CSP scheme, which means that the benefits received by the pensioners do not meet a decent, moderate standard of living; therefore, a review of pension program reform should be carried out to obtain a sustainable scheme in the long term and better pension benefits for civil service pensioners.

Regarding this problem, the researcher asked the civil servant interviewees about pension reform planning for the current CSP system. Based on the interview, 3 of 14 interviewees stated they do not have any information about pension reform; therefore, they cannot provide their opinions. Two interviewees who work as human resource management auditors but have a different gender in Yogyakarta gave their agreement with pension reform as long as it is aimed at a better policy and to improve the welfare of retirees, so that with the new system, employees will also be motivated to invest for their future retirement. Another female human resource management auditor said, "The current plan to reform the pension system is necessary and strongly supports changes that improve the welfare of retirees."

A head of the institution's regional office in Yogyakarta argued, "The choice regarding reform of the CSP system is a choice regarding the financing method and pension program planned by the employer for its workers. The nature, benefits, membership, and retirement age limit are minor issues compared to these two major issues. These minor issues will depend on the financing method and pension program chosen." A mid-level human resources analyst from a government agency hopes that CSP reform will better guarantee civil servants' welfare when they retire. "If the government wants to replace the current CSP system (DB), then perhaps it can be combined, namely with the current contributions (DB) for all civil servants, but those who want to increase their contributions with a DC pattern are welcome."

Meanwhile, interviewees who work as civil servants in central ministries in Jakarta, regardless of gender, have the same answer regarding pension system reform. "Reform of the

CSP system is urgently needed to ensure better security in the future. However, changing pension systems must be carefully considered to provide equivalent or better security." This opinion is supported by an interviewee who has worked as a civil servant for 6 years: "As a civil servant, I always comply with all policies issued by the government; however, before the decision is made, it would be better to carry out in-depth studies, comprehensive education, and socialization."

Finally, the interviewee who usually drafts regulations believes that reforming the CSP system is important to ensure future pensioners' sustainability and welfare. He argues:" Despite the challenges, with a careful, participatory, and transparent approach, these reforms can bring significant benefits to civil servants and the sustainability of the state budget. Changing the CSP system from DB to DC can help reduce the burden on the state budget and provide cost certainty. However, this change also brings significant challenges, including uncertainty about civil servants' benefits and investment risks. With the right measures, such as education, gradual transition, and investment support, the government can better manage these changes and ensure the success of pension system reform."

Furthermore, the director of budget regulation harmonization, the Ministry of Finance, realized these critical conditions of sustainability of the CSP system. Therefore, he explains that the Indonesian government wants to review and reform the pension program for civil servants because the assumptions used to design the program are no longer relevant to current conditions (Appendix 7). Nevertheless, the Indonesian government remains careful in determining programs and financing schemes (APBN, 2024). Changes to the pension system have significant fiscal implications and are very long in duration and broad in scope. The costs incurred are strongly correlated with the projected benefits that will be provided. Therefore, the consideration must be comprehensive. The government is continuing to perfect the study of the design of the new civil servant pension system (The director of budget regulation harmonization, Appendix 7).

He then argues that things that need to be reviewed in designing a pension program are the structure and components of civil servant income, civil servant mortality, the characteristics of new civil servants, the need for program accountability, and the development of investment instruments. In addition, the government's consideration in designing the new program is the ability to pay contributions for civil servants as participants, the regional government as the employer, and the amount of the RR. Income disparities between civil servants also need attention (The director of budget regulation harmonization, Appendix 7).

To fulfill the government's consideration above, there are some alternatives to reforming the pension system: parametric and systemic reforms. The Indonesian government should combine parametric and systemic reforms.

Parametric reforms

To make the current pension system more sustainable in the long term and provide better pension benefits for civil service pensioners, some parametric reforms need to be done, including increasing the contribution rate, because there is only a very small contribution (The World Bank Lead Economist, Appendix 8). In addition, he explained that "One of the package pieces was folding in the allowances to increase the (pensionable) base. For some people, it would at least increase the adequacy. However, we also advocated raising the retirement age gradually. And that would also increase adequacy over time because if you have more years of accrual then your RR will be higher when you finally retire. We also favored having an automatic indexation of pension. That can be lower than what the government does sometimes, but it is much more predictable and protects the pension's purchasing power. It also avoids a problem where certain cohorts get a better deal than others because, during that period, the government decided to increase the pensions a lot for some reason. But then they did not increase it for the next cohort for several years and that happened. So, if you make it automatic, then every generation of cohorts has the same treatment" (The World Bank Lead Economist, Appendix 8).

The Lead Economist of the World Bank argued more about retirement age by stating: "There is no real justification for not having the same retirement age. Life expectancy has been increasing and is expected to continue to increase. So, the retirement duration has been going up. So, it is just a matter of time before it rises. So, if you build that into the reform, it makes it more affordable because of the pension side. On the wage side, it is a different calculation. However, you can have a lower contribution rate with the same target RR if the retirement age increases over time" (The World Bank Lead Economist, Appendix 8).

Systemic reforms

Meanwhile, several systemic reform alternatives exist to change the current DB scheme to a new one. According to the World Bank report (2020), eight combinations of systemic reform alternatives for the Indonesian government based on these policy choices: whether to restrict the scheme to new civil servants, whether to have a pure DC or a hybrid model, and whether to integrate with the national scheme, are shown in Table 16 below.

Table 16.
Combinations of Schemes for Systemic Reforms.

	Integrated with MPP Scheme	Not integrated
New only, pure DC		X
New only, hybrid	X	
New and old, Pure DC		
New and old, hybrid		

Source: World Bank report (2020)

Based on the various alternative reforms in Table 16 above, the researcher analyzes the possible choices of a new pension system for the Indonesian CSP system, that is:

- NDC scheme;
- DC scheme;
- Integration of the current system with the MPP system.

According to the Lead Economist of the World Bank, "The NDC approach has some advantages in terms of the link between the contributions and the benefits, the incentives, and the automatic increase of the retirement age because the way it works is that you accumulate this notional balance and then convert it into an annuity and that annuity is converted based on the life expectancy at that time in the future. So, in a way, it is an automatic adjustment taking place."

However, the NDC scheme has a negative side. Lead Economist of the World Bank argues that "NDC is not addressing the sustainability problem, the fundamental sustainability problem of continuing to have and let grow your unfunded pension liability. If you have a funded DC scheme then you are limiting the size of unfunded liability, and that is not happening with the NDC." Therefore, if the Indonesian government wants to apply the NDC scheme, He suggested that the NDC scheme has to be linked to some interest rate. "It can be wage bill growth, wage growth, or average wage growth. This growth is stable and it is a very calm situation. The Indonesian government need to find a way to make sure that the interest rate, for example, GDP growth, should be more stable than wage bill growth or average wage growth" (Appendix 8).

Regarding the DC scheme, Indonesia should consider the investment risk. The Lead Economist of the World Bank argues, "the key question is what are the risks associated with the different types of pension schemes? If Indonesia were to move from the current DB to a pure DC, then they would be individual workers would now be assuming all of the investment

risks. What you can do to take care of that, of course, is to have rules about how that money can be invested. What they have done in some countries is they have made it a very conservative investment portfolio, but that results in lower returns, and lower returns would result in lower RR. So, if you want to have a target RR that is similar to the DB scheme, but you do not have a lot of risks, then you have to have a much bigger contribution to the scheme" (Appendix 8).

The Lead Economist of the World Bank then argued, "I think if it were to be applied only for a new CS, then it is very easy to afford. As long as it manages its overall fiscal policy responsibility and does not also expand the size of the government budget dramatically, then it should be affordable, even in the longer term" (Appendix 8). However, Indonesia has to prepare many budgets for paying transition costs from the DB scheme to the DC scheme: "Of course, the government has this double burden of transition where it has to pay both the old pensions that came out of the DB scheme and the contributions to the DC scheme as the employer. So, at some point that will become a challenge around maybe 25-30 years from now. That will become the highest point of the sum of the two costs, maybe earlier, and then it will start to fall. And so, in the long run, it will save the government money. So, I think it is a sensible idea" (Appendix 8).

Furthermore, in the case of Indonesia, the Lead Economist of the World Bank stated that the one with the most advantage is the integration of new civil servants with the MPP scheme. "They (Indonesia) go to the other route, which would be to have an integration, then they would be partly in the DB scheme and partly in the DC scheme. So, there the risks would be more diversified. I think this hybrid approach is probably one that we favor. It also brings with it the benefits of integration with the MPP scheme. So, that might be a good place to balance the two types of risks" (Appendix 8).

The Lead Economist of the World Bank also argued: "So, integration with MPP and a top-up DC scheme on top of that. That would and by the way, then the MPP scheme reforms need to be followed through. So, if you were to reform MPP and integrate civil servants into MPP and add a top-up occupational pension for the civil servants, I think that would give you adequacy and sustainability. And also, the benefits of labor mobility between the public and private sectors. That would be useful for the country in the future. It's not so much moving out in and out now, I suppose. But in the future, we would expect if the policy is done well, then you should have people who want to move back and forth between the public and private sectors. Not necessarily just join the public sector and stay there until they retire. So, I think

that would probably be the scenario that had the most advantages in terms of both sustainability and adequacy" (Appendix 8).

4.4. Simulation of New Pension System (DC Scheme)

This analysis section answers the question: "What are the benefits of the new pension system, and what are the risks of achieving them?"

Based on the explanation of the costs and benefits of a new pension system above, the researcher thought the Indonesian government would switch the CSP program for new civil servants from a DB scheme to a DC scheme. It is not integrated with the MPP system. It means the current civil servants are still in the CSP scheme, while the private employees are still in the MPP scheme. Therefore, based on the data of civil servants from the NCSA, the researcher forecasts the amount of pension spending on CSP benefits in the DC scheme.

Formula/Forecasting Model

The model of pension revenues is as follows:

$$\text{PR(n)} = \text{CS contributions} + \text{Government contribution} \quad (4)$$

Where:

CS contributions = CS (n) × CR (n) × AT (n)

Government contribution = CR (n) × AT (n)

$$\text{Investment returns} = \text{Interest rate x PR (n)} \quad (5)$$

Where:

PR(n) represents the pension revenues collected in the year of n,

CS(n) represents the number of CS in year n,

CR(n) is the contribution rate in year n

AT (n) represents the average annual take-home pay (THP) for CS

Therefore, Pension fund balance = PR(n) + Investment returns

Meanwhile, the model of pension expenditure is as follows:

$$PE(n) = P(n) \times AP(n) \quad (6)$$

Where:

PE(n) represents the pension expenditure in year n,

P(n) represents the number of CS pensioners in year n,

AP(n) represents the yearly average pension rate.

The Assumptions

To calculate the pension spending of CSP benefits in the DC scheme, the researcher sets the assumptions that include take-home pay (base salary, performance allowance), retirement age limit, the amount of new participants contributions and government contributions, growth in the number of employees, and calculating pension benefits 14 times a year. The researcher assumes the DC scheme for new civil servants in this simulation. Based on NCSA (2024), the number of new civil servants will be around 250,407 in 2025. The government's contribution is 10% since the researcher assumed that 10% represents the middle rate, 5% is too low, and more than 10% is too high, given that the government still has to pay pension spending for the current DB scheme.

a. Option 1

In this option 1, the pension base is only the last salary of civil servants. For more details, the assumptions used in the calculations of pension benefits are as follows:

Table 17.

Assumptions for Pension Benefits Calculations (DC Scheme) Option 1.

Number	Components	Assumption
1.	Growth of the number of Civil Servants	Zero rate
2.	The number of new civil servants	250,407
3.	Income (Take Home Pay)	
	a. Salary	Increase 2.5% yearly
	b. Performance allowance	150% from salary (salary: performance allowance = 40%:60%
4.	Pension base	Last/final salary
5.	Age of civil servant	25 years old
6.	Retirement age	58, 60, 62, 65, 67, 60, 75 (based on job position)
7.	Civil servants' contribution rate	5%
8.	Government's contribution rate	10%
9.	Interest rate (rate of return on investments)	5%
10.	Pension payment	14 months in a year

Source: Author's work

b. Option 2

All assumptions are similar to option 1; however, the contribution rate of civil servants becomes 10% for option 2.

c. Option 3

Similar to the assumptions for option 1, for option 3, the pension base is only the last salary of civil servants. However, the interest rate of return on investments is 3%.

d. Option 4

Similar to the assumptions for Option 2, the interest rate of return on investments is 3%.

Table 18 below summarizes the assumptions for options 1 to 4.

Table 18.
Assumptions for Pension Benefits Calculations (DC Scheme) Options 1 – 4.

Number	Components	Assumptions			
		Option 1	Option 2	Option 3	Option 4
1	Growth of the number of Civil Servants	Zero rate	Zero rate	Zero rate	Zero rate
2	The number of new civil servants	250,407	250,407	250,407	250,407
3	Income (Take Home Pay)				
	a. Salary	Increase 2.5% yearly	Increase 2.5% yearly	Increase 2.5% yearly	Increase 2.5% yearly
	b. Performance allowance	150% from salary (salary: performance allowance = 40%:60%	150% from salary (salary: performance allowance = 40%:60%	150% from salary (salary: performance allowance = 40%:60%	150% from salary (salary: performance allowance = 40%:60%
4	Pension base	Last/final salary	Last/final salary	Last/final salary	Last/final salary
5	Age of civil servant	25 years old	25 years old	25 years old	25 years old
6	Retirement age	58, 60, 62, 65, 67, 60, 75 (based on job position)	58, 60, 62, 65, 67, 60, 75 (based on job position)	58, 60, 62, 65, 67, 60, 75 (based on job position)	58, 60, 62, 65, 67, 60, 75 (based on job position)
7	Civil servants' contribution rate	5%	10%	5%	10%
8	Government's contribution rate	10%	10%	10%	10%
9	Interest rate of return on investments	5%	5%	3%	3%
10	Pension payment	14 months in a year	14 months in a year	14 months in a year	14 months in a year

Source: Author's work

e. Option 5

Currently, the components of civil servant allowances are very numerous and varied. Since the Indonesian government plans to reform the civil service salary system by simplifying the civil servant compensation components into salary, performance allowance, cost of living allowance, and facilities, as a consequence, in option 5, the researcher assumes the pension base is the combination of the last salary and performance allowance.

f. Option 6

Similar to the assumptions for option 5, however, the contribution rate of civil servants becomes 10%.

g. Option 7

Similar to the assumptions for option 5, the pension base is the total of the last salary and performance allowance. However, the interest rate of return on investments is 3%.

h. Option 8

Similar to the assumptions for option 6, however, the interest rate of return on investments is 3%.

Table 19 summarizes the assumptions for options 5 to 8.

Table 19.
Assumptions for Pension Benefits Calculations (DC Scheme) Options 5 – 8.

Number	Components	Assumptions			
		Option 5	Option 6	Option 7	Option 8
1	Growth of the number of Civil Servants	Zero rate	Zero rate	Zero rate	Zero rate
2	The number of new civil servants	250,407	250,407	250,407	250,407
3	Income (Take Home Pay)				
	a. Salary	Increase 2.5% yearly	Increase 2.5% yearly	Increase 2.5% yearly	Increase 2.5% yearly
	b. Performance allowance	150% from salary (salary: performance allowance = 40%:60%	150% from salary (salary: performance allowance = 40%:60%	150% from salary (salary: performance allowance = 40%:60%	150% from salary (salary: performance allowance = 40%:60%
4	Pension base	Combination of last/final salary and performance allowance	Combination of last/final salary and performance allowance	Combination of last/final salary and performance allowance	Combination of last/final salary and performance allowance
5	Age of civil servant	25 years old	25 years old	25 years old	25 years old
6	Retirement age	58, 60, 62, 65, 67, 60, 75 (based on job position)	58, 60, 62, 65, 67, 60, 75 (based on job position)	58, 60, 62, 65, 67, 60, 75 (based on job position)	58, 60, 62, 65, 67, 60, 75 (based on job position)
7	Civil servants' contribution rate	5%	10%	5%	10%
8	Government's contribution rate	10%	10%	10%	10%
9	Interest rate of return on investments	5%	5%	3%	3%
10	Pension payment	14 months in a year	14 months in a year	14 months in a year	14 months in a year

Source: Author's work

Calculation Result

a. Option 1

According to the RR[6] analysis, the pension benefits provided in Option 1 are generally insufficient for civil servant pensioners. The maximum RR is 0.36 (36%) at a retirement age 75, significantly below the ILO's minimum recommendation of 40%. Currently, the RR stands at only 19% because the retirement age is set at 58. Most values fall within the range of 0.00 to 0.30 (30%), indicating that, without additional sources of income, most retirees would face a substantial decrease in their income. Overall, the pension benefits are inadequate for maintaining the same standard of living after retirement. For more detailed calculations, please refer to Appendix 6a.

[6] Replacement rate (RR) = Annual Pension Benefits/Final Annual THP

b. Option 2:

According to the calculations outlined in Appendix 6b, the pension benefits specified in Option 2 are superior to those in Option 1. The maximum RR is 0.49 (49%) with a retirement age of 75 years, which exceeds the ILO's minimum recommendation of 40%. However, the pension benefits in Option 2 are still inadequate. For the current retirement age of 58, the RR only reaches 25%, with most values falling between 0.00 and 0.30 (30%). As a result, many pensioners are likely to experience a significant reduction in their income.

c. Option 3:

The RR implies that Option 3's pension benefits are lower than Option 1's. With a 75-year-old retirement age, the maximum RR is 0.21 (21%)—much less than the ILO's recommended minimum of 40%. Despite that, considering the current retirement age is 58, the RR is only 13%. The researcher advises against this option since the pension benefits indicated in the table (Appendix 6c) are insufficient to maintain the same quality of life after retirement.

d. Option 4:

As with Option 3, Option 4's RR is less than Option 1's. The highest RR is 0.21 (21%) at a 75-year-old retirement age, significantly below the ILO's suggested minimum of 40%. Additionally, the RR is only 18% since the present retirement age is 58. The calculation details can be seen in Appendix 6d.

In summary, Appendix 6e indicates that the budget predictions for the government are similar across DC scheme options 1 to 4, as the government contribution remains at 10% of the total salary for new civil servants. However, as previously calculated, Options 1 to 4 do not provide sufficient pension benefits for civil service pensioners, as the RR for these options falls below the ILO's suggested minimum of 40%.

Additionally, the Indonesian government is still obligated to fund the current CSP system, which operates under a DB scheme for existing civil servants. The government’s budget predictions for this obligation are detailed in Table 20 below. This table shows a significant reduction in the pension gap compared to the figures presented in Table 15. Specifically, while Table 15 shows the pension gap expanding from 140 trillion IDR in 2026 to 1,286 trillion IDR by 2075, Table 20 reports a decrease in the pension gap from 138 trillion IDR in 2026 to 404 trillion IDR in 2075.

Table 20.

Government Budget Prediction of CSP Expenditure (DB Scheme) After Reform (IDR).

Working Year	Year	Accrual Rate	Year of Service	Last Salary (Average)	Pensioners	Contribution Rate	Civil Servants	Basic Salary (Average)	Monthly Pension Expenditure (Benefits)	Annual Pension Expenditure (Benefits)	Monthly Pension Contribution	Annual Pension Contribution	Pension Gap		PR/PE
													IDR	%	
Year 0	2026	2.5%	30	4,753,950	2,931,362	4.75%	3,719,396	3,630,455	10,451,662,782,419	146,323,278,953,869	641,397,176,430	7,696,766,117,160	138,626,512,836,709	1801.10%	5.26%
Year 1	2027	2.5%	30	4,872,799	2,947,123	4.75%	3,645,008	3,721,216	10,770,553,284,710	150,787,745,985,937	644,283,463,724	7,731,401,564,687	143,056,344,421,250	1850.33%	5.13%
Year 2	2028	2.5%	30	4,994,619	2,961,081	4.75%	3,572,108	3,814,246	11,092,102,155,350	155,289,430,174,894	647,182,739,311	7,766,192,871,728	147,523,237,303,166	1899.56%	5.00%
Year 3	2029	2.5%	30	5,119,484	2,973,301	4.75%	3,500,666	3,909,603	11,416,326,862,121	159,828,576,069,696	650,095,061,638	7,801,140,739,651	152,027,435,330,045	1948.78%	4.88%
Year 4	2030	2.5%	30	5,247,471	2,983,849	4.75%	3,430,652	4,007,343	11,743,244,976,185	164,405,429,666,590	653,020,489,415	7,836,245,872,980	156,569,183,793,610	1998.01%	4.77%
Year 5	2031	2.5%	30	5,378,658	2,992,785	4.75%	3,362,039	4,107,526	12,072,874,172,656	169,020,238,417,190	655,959,081,617	7,871,508,979,408	161,148,729,437,782	2047.24%	4.66%
Year 6	2032	2.5%	30	5,513,125	3,000,170	4.75%	3,294,799	4,210,214	12,405,232,231,185	173,673,251,236,595	658,910,897,485	7,906,930,769,815	165,766,320,466,780	2096.47%	4.55%
Year 7	2033	2.5%	30	5,650,953	3,006,062	4.75%	3,228,903	4,315,470	12,740,337,036,539	178,364,718,511,547	661,875,996,523	7,942,511,958,280	170,422,206,553,267	2145.70%	4.45%
Year 8	2034	2.5%	30	5,792,226	3,010,519	4.75%	3,164,325	4,423,356	13,078,206,579,188	183,094,892,108,636	664,854,438,508	7,978,253,262,092	175,116,638,846,544	2194.92%	4.36%
Year 9	2035	2.5%	30	5,937,032	3,013,595	4.75%	3,101,038	4,533,940	13,418,858,955,896	187,864,025,382,549	667,846,283,481	8,014,155,401,771	179,849,869,980,777	2244.15%	4.27%
Year 10	2036	2.5%	30	6,085,458	3,015,344	4.75%	3,039,017	4,647,289	13,762,312,370,312	192,672,373,184,361	670,851,591,757	8,050,219,101,079	184,622,154,083,282	2293.38%	4.18%
Year 11	2037	2.5%	30	6,237,594	3,015,818	4.75%	2,978,237	4,763,471	14,108,585,133,563	197,520,191,869,876	673,870,423,920	8,086,445,087,034	189,433,746,782,842	2342.61%	4.09%
Year 12	2038	2.5%	30	6,393,534	3,015,066	4.75%	2,918,672	4,882,558	14,457,695,664,857	202,407,739,308,004	676,902,840,827	8,122,834,089,926	194,284,905,218,078	2391.84%	4.01%
Year 13	2039	2.5%	30	6,553,373	3,013,138	4.75%	2,860,299	5,004,622	14,809,662,492,085	207,335,274,889,190	679,948,903,611	8,159,386,843,330	199,175,888,045,859	2441.06%	3.94%
Year 14	2040	2.5%	30	6,717,207	3,010,081	4.75%	2,803,093	5,129,737	15,164,504,252,420	212,303,059,533,885	683,008,673,677	8,196,104,084,125	204,106,955,449,760	2490.29%	3.86%
Year 15	2041	2.5%	30	6,885,137	3,005,942	4.75%	2,747,031	5,257,981	15,522,239,692,933	217,311,355,701,066	686,082,212,709	8,232,986,552,504	209,078,369,148,562	2539.52%	3.79%
Year 16	2042	2.5%	30	7,057,265	3,000,763	4.75%	2,692,090	5,389,430	15,882,887,671,200	222,360,427,396,796	689,169,582,666	8,270,034,991,990	214,090,392,404,806	2588.75%	3.72%
Year 17	2043	2.5%	30	7,233,697	2,994,590	4.75%	2,638,249	5,524,166	16,246,467,155,917	227,450,540,182,835	692,270,845,788	8,307,250,149,454	219,143,290,033,381	2637.98%	3.65%
Year 18	2044	2.5%	30	7,414,540	2,987,463	4.75%	2,585,484	5,662,270	16,612,997,227,521	232,581,961,185,293	695,386,064,594	8,344,632,775,127	224,237,328,410,166	2687.20%	3.59%
Year 19	2045	2.5%	30	7,599,903	2,979,423	4.75%	2,533,774	5,803,827	16,982,497,078,810	237,754,959,103,335	698,515,301,885	8,382,183,622,615	229,372,775,480,720	2736.43%	3.53%
Year 20	2046	2.5%	30	7,789,901	2,970,510	4.75%	2,483,098	5,948,923	17,354,986,015,566	242,969,804,217,925	701,658,620,743	8,419,903,448,917	234,549,900,769,008	2785.66%	3.47%
Year 21	2047	2.5%	30	7,984,648	2,960,762	4.75%	2,433,436	6,097,646	17,730,483,457,187	248,226,768,400,624	704,816,084,536	8,457,793,014,437	239,768,975,386,187	2834.89%	3.41%
Year 22	2048	2.5%	30	8,184,264	2,950,216	4.75%	2,384,768	6,250,087	18,109,008,937,317	253,526,125,122,433	707,987,756,917	8,495,853,083,002	245,030,272,039,431	2884.12%	3.35%
Year 23	2049	2.5%	30	8,388,871	2,938,907	4.75%	2,337,072	6,406,339	18,490,582,104,477	258,868,149,462,677	711,173,701,823	8,534,084,421,875	250,334,065,040,802	2933.34%	3.30%
Year 24	2050	2.5%	30	8,598,593	2,926,870	4.75%	2,290,331	6,566,498	18,875,222,722,711	264,253,118,117,950	714,373,983,481	8,572,487,801,774	255,680,630,316,176	2982.57%	3.24%
Year 25	2051	2.5%	30	8,813,558	2,914,139	4.75%	2,244,524	6,730,660	19,262,950,672,221	269,681,309,411,094	717,588,666,407	8,611,063,996,882	261,070,245,414,212	3031.80%	3.19%
Year 26	2052	2.5%	30	9,033,896	2,900,747	4.75%	2,199,634	6,898,927	19,653,785,950,017	275,153,003,300,234	720,817,815,406	8,649,813,784,868	266,503,189,515,367	3081.03%	3.14%
Year 27	2053	2.5%	30	9,259,744	2,886,725	4.75%	2,155,641	7,071,400	20,047,748,670,562	280,668,481,387,861	724,061,495,575	8,688,737,946,899	271,979,743,440,962	3130.26%	3.10%
Year 28	2054	2.5%	30	9,491,237	2,872,103	4.75%	2,112,528	7,248,185	20,444,859,066,426	286,228,026,929,960	727,319,772,305	8,727,837,267,660	277,500,189,662,299	3179.48%	3.05%
Year 29	2055	2.5%	30	9,728,518	2,856,912	4.75%	2,070,278	7,429,389	20,845,137,488,942	291,831,924,845,189	730,592,711,280	8,767,112,535,365	283,064,812,309,824	3228.71%	3.00%
Year 30	2056	2.5%	30	9,971,731	2,841,179	4.75%	2,028,872	7,615,124	21,248,604,408,865	297,480,461,724,110	733,880,378,481	8,806,564,541,774	288,673,897,182,336	3277.94%	2.96%
Year 31	2057	2.5%	30	10,221,025	2,824,933	4.75%	1,988,295	7,805,502	21,655,280,417,033	303,173,925,838,464	737,182,840,184	8,846,194,082,212	294,327,731,756,252	3327.17%	2.92%
Year 32	2058	2.5%	30	10,476,550	2,808,200	4.75%	1,948,529	8,000,640	22,065,186,225,036	308,912,607,150,497	740,500,162,965	8,886,001,955,582	300,026,605,194,915	3376.40%	2.88%
Year 33	2059	2.5%	30	10,738,464	2,791,007	4.75%	1,909,558	8,200,656	22,478,342,665,881	314,696,797,322,339	743,832,413,699	8,925,988,964,382	305,770,808,357,957	3425.62%	2.84%
Year 34	2060	2.5%	30	11,006,926	2,773,378	4.75%	1,871,367	8,405,672	22,894,770,694,674	320,526,789,725,434	747,179,659,560	8,966,155,914,722	311,560,633,810,712	3474.85%	2.80%
Year 35	2061	2.5%	30	11,282,099	2,755,337	4.75%	1,833,940	8,615,814	23,314,491,389,287	326,402,879,450,011	750,541,968,028	9,006,503,616,338	317,396,375,833,673	3524.08%	2.76%
Year 36	2062	2.5%	30	11,564,151	2,736,909	4.75%	1,797,261	8,831,209	23,737,525,951,044	332,325,363,314,617	753,919,406,884	9,047,032,882,612	323,278,330,432,005	3573.31%	2.72%
Year 37	2063	2.5%	30	11,853,255	2,718,116	4.75%	1,761,316	9,051,989	24,163,895,705,407	338,294,539,875,695	757,312,044,215	9,087,744,530,583	329,206,795,345,112	3622.54%	2.69%
Year 38	2064	2.5%	30	12,149,586	2,698,980	4.75%	1,726,089	9,278,289	24,593,622,102,658	344,310,709,437,216	760,719,948,414	9,128,639,380,971	335,182,070,056,245	3671.76%	2.65%
Year 39	2065	2.5%	30	12,453,326	2,679,523	4.75%	1,691,568	9,510,246	25,026,726,718,597	350,374,174,060,358	764,143,188,182	9,169,718,258,185	341,204,455,802,173	3720.99%	2.62%
Year 40	2066	2.5%	30	12,764,659	2,659,764	4.75%	1,657,736	9,748,003	25,463,231,255,232	356,485,237,573,243	767,581,832,529	9,210,981,990,347	347,274,255,582,896	3770.22%	2.58%
Year 41	2067	2.5%	30	13,083,776	2,639,723	4.75%	1,624,582	9,991,703	25,903,157,541,480	362,644,205,580,718	771,035,950,775	9,252,431,409,304	353,391,774,171,415	3819.45%	2.55%
Year 42	2068	2.5%	30	13,410,870	2,619,420	4.75%	1,592,090	10,241,495	26,346,527,533,872	368,851,385,474,201	774,505,612,554	9,294,067,350,646	359,557,318,123,555	3868.68%	2.52%
Year 43	2069	2.5%	30	13,746,142	2,598,874	4.75%	1,560,248	10,497,533	26,793,363,317,254	375,107,086,441,561	777,990,887,810	9,335,890,653,724	365,771,195,787,837	3917.90%	2.49%
Year 44	2070	2.5%	30	14,089,795	2,578,101	4.75%	1,529,043	10,759,971	27,243,687,105,505	381,411,619,477,072	781,491,846,805	9,377,902,161,665	372,033,717,315,407	3967.13%	2.46%
Year 45	2071	2.5%	30	14,442,040	2,557,120	4.75%	1,498,462	11,028,970	27,697,521,242,243	387,765,297,391,402	785,008,560,116	9,420,102,721,393	378,345,194,670,009	4016.36%	2.43%
Year 46	2072	2.5%	30	14,803,091	2,535,947	4.75%	1,468,493	11,304,694	28,154,888,201,548	394,168,434,821,666	788,541,098,637	9,462,493,183,639	384,705,941,638,027	4065.59%	2.40%
Year 47	2073	2.5%	30	15,173,169	2,514,598	4.75%	1,439,123	11,587,312	28,615,810,588,681	400,621,348,241,531	792,089,533,580	9,505,074,402,965	391,116,273,838,566	4114.82%	2.37%
Year 48	2074	2.5%	30	15,552,498	2,493,088	4.75%	1,410,341	11,876,995	29,080,311,140,812	407,124,355,971,369	795,653,936,482	9,547,847,237,779	397,576,508,733,591	4164.04%	2.35%
Year 49	2075	2.5%	30	15,941,310	2,471,433	4.75%	1,382,134	12,173,919	29,548,412,727,748	413,677,778,188,475	799,234,379,196	9,590,812,550,349	404,086,965,638,126	4213.27%	2.32%

Source: Author's work

Table 21 illustrates the total budget for the Indonesian government under the implementation of options 1 to 4 compared to the budget without reforming the current system, as detailed in Table 15 above. According to Table 21, the Indonesian government will incur higher pension spending (resulting in a deficit) during the first six years of implementing options 1 to 4. However, from 2033 onward, there will be a surplus in government spending for pension payments. It indicates that the sustainability of the pension scheme would improve with the proposed options. Therefore, the sustainability of the new CSP system is expected to be better than that of the current CSP system without pension reform.

Based on these calculations, hypothesis 4 of this research, "H4: Reforming the pension system from the DB scheme to the new scheme has a crucial role in achieving the long-term sustainability of the Indonesian CSP system," can be accepted. However, the adequacy of pension benefits under these options remains a concern, as they do not provide sufficient support to maintain the same standard of living after retirement. Consequently, the researcher suggests that these options should not be selected, despite their potential for better sustainability.

Table 21.

Comparison of Government Spending for CSP Payments:

DC Scheme Options 1-4 (Reform) versus DB Scheme (No Reform).

Working Year	Year	Annual Pension Contribution DB Scheme (No Reform)	Annual Pension Contribution with DB scheme (Reform)	DC Option 1-4 (Reform)	Total Government Spending (Reform)	Surplus/Defisit	In percent of No Reform
Year 0	2026	7,853,842,976,694	7,696,766,117,160	1,064,301,935,079	8,761,068,052,240	(907,225,075,546)	-11.55%
Year 1	2027	8,050,189,051,111	7,731,401,564,687	1,090,909,483,456	8,822,311,048,144	(772,121,997,032)	-9.59%
Year 2	2028	8,251,443,777,389	7,766,192,871,728	1,118,182,220,543	8,884,375,092,271	(632,931,314,882)	-7.67%
Year 3	2029	8,457,729,871,824	7,801,140,739,651	1,146,136,776,056	8,947,277,515,708	(489,547,643,884)	-5.79%
Year 4	2030	8,669,173,118,619	7,836,245,872,980	1,174,790,195,458	9,011,036,068,437	(341,862,949,818)	-3.94%
Year 5	2031	8,885,902,446,585	7,871,508,979,408	1,204,159,950,344	9,075,668,929,752	(189,766,483,167)	-2.14%
Year 6	2032	9,108,050,007,750	7,906,930,769,815	1,234,263,949,103	9,141,194,718,918	(33,144,711,169)	-0.36%
Year 7	2033	9,335,751,257,943	7,942,511,958,280	1,265,120,547,830	9,207,632,506,110	128,118,751,833	1.37%
Year 8	2034	9,569,145,039,392	7,978,253,262,092	1,296,748,561,526	9,275,001,823,618	294,143,215,774	3.07%
Year 9	2035	9,808,373,665,377	8,014,155,401,771	1,329,167,275,564	9,343,322,677,336	465,050,988,041	4.74%
Year 10	2036	10,053,583,007,011	8,050,219,101,079	1,362,396,457,453	9,412,615,558,533	640,967,448,478	6.38%
Year 11	2037	10,304,922,582,186	8,086,445,087,034	1,396,456,368,890	9,482,901,455,924	822,021,126,263	7.98%
Year 12	2038	10,562,545,646,741	8,122,834,089,926	1,431,367,778,112	9,554,201,868,038	1,008,343,778,703	9.55%
Year 13	2039	10,826,609,287,910	8,159,386,843,330	1,467,151,972,565	9,626,538,815,895	1,200,070,472,014	11.08%
Year 14	2040	11,097,274,520,107	8,196,104,084,125	1,503,830,771,879	9,699,934,856,004	1,397,339,664,103	12.59%
Year 15	2041	11,374,706,383,110	8,232,986,552,504	1,541,426,541,176	9,774,413,093,680	1,600,293,289,430	14.07%
Year 16	2042	11,659,074,042,688	8,270,034,991,990	1,579,962,204,705	9,849,997,196,695	1,809,076,845,992	15.52%
Year 17	2043	11,950,550,893,755	8,307,250,149,454	1,619,461,259,823	9,926,711,409,277	2,023,839,484,478	16.94%
Year 18	2044	12,249,314,666,099	8,344,632,775,127	1,659,947,791,318	10,004,580,566,445	2,244,734,099,654	18.33%
Year 19	2045	12,555,547,532,751	8,382,183,622,615	1,701,446,486,101	10,083,630,108,716	2,471,917,424,035	19.69%
Year 20	2046	12,869,436,221,070	8,419,903,448,917	1,743,982,648,254	10,163,886,097,171	2,705,550,123,900	21.02%
Year 21	2047	13,191,172,126,597	8,457,793,014,437	1,787,582,214,460	10,245,375,228,897	2,945,796,897,700	22.33%
Year 22	2048	13,520,951,429,762	8,495,853,083,002	1,832,271,769,822	10,328,124,852,824	3,192,826,576,938	23.61%
Year 23	2049	13,858,975,215,506	8,534,084,421,875	1,878,078,564,067	10,412,162,985,943	3,446,812,229,563	24.87%
Year 24	2050	14,205,449,595,893	8,572,487,801,774	1,925,030,528,169	10,497,518,329,943	3,707,931,265,951	26.10%
Year 25	2051	14,560,585,835,791	8,611,063,996,882	1,973,156,291,373	10,584,220,288,255	3,976,365,547,536	27.31%
Year 26	2052	14,924,600,481,686	8,649,813,784,868	2,022,485,198,658	10,672,298,983,525	4,252,301,498,160	28.49%
Year 27	2053	15,297,715,493,728	8,688,737,946,899	2,073,047,328,624	10,761,785,275,524	4,535,930,218,204	29.65%
Year 28	2054	15,680,158,381,071	8,727,837,267,660	2,124,873,511,840	10,852,710,779,500	4,827,447,601,571	30.79%
Year 29	2055	16,072,162,340,598	8,767,112,535,365	2,177,995,349,636	10,945,107,885,001	5,127,054,455,597	31.90%
Year 30	2056	16,473,966,399,113	8,806,564,541,774	2,232,445,233,377	11,039,009,775,151	5,434,956,623,962	32.99%
Year 31	2057	16,885,815,559,090	8,846,194,082,212	2,288,256,364,211	11,134,450,446,423	5,751,365,112,667	34.06%
Year 32	2058	17,307,960,948,068	8,886,001,955,582	2,345,462,773,316	11,231,464,728,898	6,076,496,219,169	35.11%
Year 33	2059	17,740,659,971,769	8,925,988,964,382	2,404,099,342,649	11,330,088,307,031	6,410,571,664,738	36.13%
Year 34	2060	18,184,176,471,064	8,966,155,914,722	2,464,201,826,215	11,430,357,740,937	6,753,818,730,126	37.14%
Year 35	2061	18,638,780,882,840	9,006,503,616,338	2,525,806,871,871	11,532,310,488,209	7,106,470,394,631	38.13%
Year 36	2062	19,104,750,404,911	9,047,032,882,612	2,588,952,043,668	11,635,984,926,279	7,468,765,478,632	39.09%
Year 37	2063	19,582,369,165,034	9,087,744,530,583	2,653,675,844,759	11,741,420,375,343	7,840,948,789,691	40.04%
Year 38	2064	20,071,928,394,160	9,128,639,380,971	2,720,017,740,878	11,848,657,121,849	8,223,271,272,311	40.97%
Year 39	2065	20,573,726,604,014	9,169,718,258,185	2,788,018,184,400	11,957,736,442,586	8,615,990,161,428	41.88%
Year 40	2066	21,088,069,769,114	9,210,981,990,347	2,857,718,639,010	12,068,700,629,357	9,019,369,139,757	42.77%
Year 41	2067	21,615,271,513,342	9,252,431,409,304	2,929,161,604,985	12,181,593,014,289	9,433,678,499,053	43.64%
Year 42	2068	22,155,653,301,176	9,294,067,350,646	3,002,390,645,110	12,296,457,995,756	9,859,195,305,420	44.50%
Year 43	2069	22,709,544,633,705	9,335,890,653,724	3,077,450,411,238	12,413,341,064,961	10,296,203,568,744	45.34%
Year 44	2070	23,277,283,249,548	9,377,902,161,665	3,154,386,671,519	12,532,288,833,184	10,744,994,416,364	46.16%
Year 45	2071	23,859,215,330,786	9,420,102,721,393	3,233,246,338,307	12,653,349,059,700	11,205,866,271,087	46.97%
Year 46	2072	24,455,695,714,056	9,462,493,183,639	3,314,077,496,764	12,776,570,680,404	11,679,125,033,652	47.76%
Year 47	2073	25,067,088,106,907	9,505,074,402,965	3,396,929,434,184	12,902,003,837,149	12,165,084,269,758	48.53%
Year 48	2074	25,693,765,309,580	9,547,847,237,779	3,481,852,670,038	13,029,699,907,817	12,664,065,401,763	49.29%
Year 49	2075	26,336,109,442,320	9,590,812,550,349	3,568,898,986,789	13,159,711,537,138	13,176,397,905,182	50.03%

Source: Author's work

e. Option 5:

Option 5 calculates the pension base as the sum of the last salary and performance allowance. The RR claims that the pension benefits provided in Option 5 are higher than those in Options 1 through 4. The RR stands at 40%, which aligns with the minimum 40% recommended by the ILO for a retirement age of 54. However, the RR increases to 48% when the retirement age is 58, reaching 91% at a retirement age of 75. According to calculations in Appendix 6f, the average pension benefits are sufficient to maintain a steady standard of living after retirement.

f. Option 6:

The calculation indicates that the pension benefits in Option 6 are significantly better than those in Option 5. This difference arises from the higher contribution rate for civil servants in Option 6, which is set at 10%, compared to 5% in Option 5. The RR for different retirement ages is as follows: 64% at the current retirement age of 58, 69% at age 60, 85% at age 65, and 91% at age 75. These pension benefits are generally adequate to maintain a stable quality of life during retirement. However, the 10% contribution rate will considerably reduce civil servants' THP. Therefore, the researcher recommends adopting this option, but emphasizes that the Indonesian government should communicate this plan to all new civil servants before its implementation. Detailed calculations can be found in Appendix 6g.

g. Option 7:

According to the calculations detailed in Appendix 6h, the RR for pension benefits provided by Option 7 is lower than those offered by Option 5, assuming a 3% interest rate of return on assets and all other assumptions remain consistent. The RR is currently 33%, below the ILO recommended minimum of 40% for the retirement age of 58. However, the RR increases to 41% at the retirement age of 65 and 52% at 75. The researcher suggests avoiding Option 7 since the RRs indicated in Appendix 6h are mostly below 40%, signaling that the pension payments may not be adequate to sustain a similar quality of life after retirement.

h. Option 8:

Since the interest rate of return assumption for Option 8 is 3%, which is lower than the 5% assumed for Option 6, the retirement results (RR) indicate that the pension benefits offered by Option 8 are significantly lower than those provided by Option 6. At the current retirement age of 58, the RR stands at 44%. It increases to 47% by age 60, rises to 54% at age 65, and

reaches 69% at age 75. On average, the pension benefits from either option could support a stable standard of living in retirement. Additionally, considering the uncertain investment climate in Indonesia, the 3% interest rate of return for Option 8 may be a more reasonable assumption than the 5% for Option 6. For detailed calculations, please refer to Appendix 6i.

According to the calculations presented, Options 5 to 8 offer greater adequacy of pension benefits for civil service pensioners compared to Options 1 to 4. It is primarily because the pension base in Options 5 to 8 includes the sum of the last salary and performance allowance. As a result, we can accept the hypothesis of this research, "H5: Changing the pension benefits formula positively impacts improving the adequacy of the Indonesian CSP system." However, it is important to note that the annual budget projections for Options 5 to 8 are significantly higher than those for Options 1 to 4 (as shown in Appendix 6j). In addition to implementing the DC scheme under Options 5 to 8, the Indonesian government will still need to honor the current CSP system, which operates under the DB scheme for existing civil servants. Table 22 outlines the total budget implications for the Indonesian government if Options 5 to 8 are adopted compared to the budget without reforming the current system.

Based on Table 22, the Indonesian government will experience higher pension spending (resulting in a deficit) during the first 19 years of implementing Options 5 to 8. However, it is projected that by 2046, there will be a surplus in government spending for pension payments. Although the sustainability of the pension scheme for Options 5 to 8 may take longer to achieve compared to Options 1 to 4, the adequacy of pension benefits will be better in Options 5 to 8. Therefore, this reform strategy aims to achieve the adequacy and sustainability of the CSP scheme simultaneously.

Table 22.

Comparison of Government Spending for CSP Payment

Between DC Scheme Options 5-8 (Reform) and DB Scheme (No Reform).

Working Year	Year	Annual Pension Contribution DB Scheme (No Reform)	Annual Pension Contribution with DB Scheme (Reform)	DC Option 5-8 (Reform)	Total Government Spending (Reform)	Surplus/Defisit	In percent of No Reform
Year 0	2026	7,853,842,976,694	7,696,766,117,160	2,660,754,837,699	10,357,520,954,859	(2,503,677,978,165)	-31.88%
Year 1	2027	8,050,189,051,111	7,731,401,564,687	2,727,273,708,641	10,458,675,273,328	(2,408,486,222,217)	-29.92%
Year 2	2028	8,251,443,777,389	7,766,192,871,728	2,795,455,551,357	10,561,648,423,085	(2,310,204,645,696)	-28.00%
Year 3	2029	8,457,729,871,824	7,801,140,739,651	2,865,341,940,141	10,666,482,679,792	(2,208,752,807,968)	-26.12%
Year 4	2030	8,669,173,118,619	7,836,245,872,980	2,936,975,488,644	10,773,221,361,624	(2,104,048,243,005)	-24.27%
Year 5	2031	8,885,902,446,585	7,871,508,979,408	3,010,399,875,861	10,881,908,855,269	(1,996,006,408,684)	-22.46%
Year 6	2032	9,108,050,007,750	7,906,930,769,815	3,085,659,872,757	10,992,590,642,572	(1,884,540,634,823)	-20.69%
Year 7	2033	9,335,751,257,943	7,942,511,958,280	3,162,801,369,576	11,105,313,327,856	(1,769,562,069,912)	-18.95%
Year 8	2034	9,569,145,039,392	7,978,253,262,092	3,241,871,403,815	11,220,124,665,907	(1,650,979,626,515)	-17.25%
Year 9	2035	9,808,373,665,377	8,014,155,401,771	3,322,918,188,911	11,337,073,590,682	(1,528,699,925,305)	-15.59%
Year 10	2036	10,053,583,007,011	8,050,219,101,079	3,405,991,143,634	11,456,210,244,713	(1,402,627,237,702)	-13.95%
Year 11	2037	10,304,922,582,186	8,086,445,087,034	3,491,140,922,224	11,577,586,009,258	(1,272,663,427,072)	-12.35%
Year 12	2038	10,562,545,646,741	8,122,834,089,926	3,578,419,445,280	11,701,253,535,206	(1,138,707,888,465)	-10.78%
Year 13	2039	10,826,609,287,910	8,159,386,843,330	3,667,879,931,412	11,827,266,774,742	(1,000,657,486,833)	-9.24%
Year 14	2040	11,097,274,520,107	8,196,104,084,125	3,759,576,929,697	11,955,681,013,823	(858,406,493,715)	-7.74%
Year 15	2041	11,374,706,383,110	8,232,986,552,504	3,853,566,352,940	12,086,552,905,444	(711,846,522,334)	-6.26%
Year 16	2042	11,659,074,042,688	8,270,034,991,990	3,949,905,511,763	12,219,940,503,753	(560,866,461,066)	-4.81%
Year 17	2043	11,950,550,893,755	8,307,250,149,454	4,048,653,149,557	12,355,903,299,011	(405,352,405,256)	-3.39%
Year 18	2044	12,249,314,666,099	8,344,632,775,127	4,149,869,478,296	12,494,502,253,423	(245,187,587,324)	-2.00%
Year 19	2045	12,555,547,532,751	8,382,183,622,615	4,253,616,215,254	12,635,799,837,868	(80,252,305,117)	-0.64%
Year 20	2046	12,869,436,221,070	8,419,903,448,917	4,359,956,620,635	12,779,860,069,552	89,576,151,519	0.70%
Year 21	2047	13,191,172,126,597	8,457,793,014,437	4,468,955,536,151	12,926,748,550,588	264,423,576,009	2.00%
Year 22	2048	13,520,951,429,762	8,495,853,083,002	4,580,679,424,555	13,076,532,507,556	444,418,922,206	3.29%
Year 23	2049	13,858,975,215,506	8,534,084,421,875	4,695,196,410,168	13,229,280,832,044	629,694,383,462	4.54%
Year 24	2050	14,205,449,595,893	8,572,487,801,774	4,812,576,320,423	13,385,064,122,196	820,385,473,697	5.78%
Year 25	2051	14,560,585,835,791	8,611,063,996,882	4,932,890,728,433	13,543,954,725,315	1,016,631,110,476	6.98%
Year 26	2052	14,924,600,481,686	8,649,813,784,868	5,056,212,996,644	13,706,026,781,512	1,218,573,700,174	8.16%
Year 27	2053	15,297,715,493,728	8,688,737,946,899	5,182,618,321,560	13,871,356,268,460	1,426,359,225,268	9.32%
Year 28	2054	15,680,158,381,071	8,727,837,267,660	5,312,183,779,599	14,040,021,047,260	1,640,137,333,811	10.46%
Year 29	2055	16,072,162,340,598	8,767,112,535,365	5,444,988,374,089	14,212,100,909,454	1,860,061,431,144	11.57%
Year 30	2056	16,473,966,399,113	8,806,564,541,774	5,581,113,083,441	14,387,677,625,216	2,086,288,773,897	12.66%
Year 31	2057	16,885,815,559,090	8,846,194,082,212	5,720,640,910,527	14,566,834,992,740	2,318,980,566,351	13.73%
Year 32	2058	17,307,960,948,068	8,886,001,955,582	5,863,656,933,291	14,749,658,888,873	2,558,302,059,195	14.78%
Year 33	2059	17,740,659,971,769	8,925,988,964,382	6,010,248,356,623	14,936,237,321,005	2,804,422,650,764	15.81%
Year 34	2060	18,184,176,471,064	8,966,155,914,722	6,160,504,565,538	15,126,660,480,260	3,057,515,990,803	16.81%
Year 35	2061	18,638,780,882,840	9,006,503,616,338	6,314,517,179,677	15,321,020,796,015	3,317,760,086,825	17.80%
Year 36	2062	19,104,750,404,911	9,047,032,882,612	6,472,380,109,169	15,519,412,991,781	3,585,337,413,131	18.77%
Year 37	2063	19,582,369,165,034	9,087,744,530,583	6,634,189,611,898	15,721,934,142,481	3,860,435,022,553	19.71%
Year 38	2064	20,071,928,394,160	9,128,639,380,971	6,800,044,352,196	15,928,683,733,167	4,143,244,660,993	20.64%
Year 39	2065	20,573,726,604,014	9,169,718,258,185	6,970,045,461,000	16,139,763,719,186	4,433,962,884,828	21.55%
Year 40	2066	21,088,069,769,114	9,210,981,990,347	7,144,296,597,525	16,355,278,587,873	4,732,791,181,242	22.44%
Year 41	2067	21,615,271,513,342	9,252,431,409,304	7,322,904,012,464	16,575,335,421,767	5,039,936,091,575	23.32%
Year 42	2068	22,155,653,301,176	9,294,067,350,646	7,505,976,612,775	16,800,043,963,421	5,355,609,337,755	24.17%
Year 43	2069	22,709,544,633,705	9,335,890,653,724	7,693,626,028,095	17,029,516,681,818	5,680,027,951,887	25.01%
Year 44	2070	23,277,283,249,548	9,377,902,161,665	7,885,966,678,797	17,263,868,840,462	6,013,414,409,085	25.83%
Year 45	2071	23,859,215,330,786	9,420,102,721,393	8,083,115,845,767	17,503,218,567,160	6,355,996,763,627	26.64%
Year 46	2072	24,455,695,714,056	9,462,493,183,639	8,285,193,741,911	17,747,686,925,550	6,708,008,788,506	27.43%
Year 47	2073	25,067,088,106,907	9,505,074,402,965	8,492,323,585,459	17,997,397,988,424	7,069,690,118,483	28.20%
Year 48	2074	25,693,765,309,580	9,547,847,237,779	8,704,631,675,095	18,252,478,912,874	7,441,286,396,706	28.96%
Year 49	2075	26,336,109,442,320	9,590,812,550,349	8,922,247,466,973	18,513,060,017,321	7,823,049,424,998	29.70%

Source: Author's work

In conclusion, this simulation indicates that the DC scheme offers the advantage of achieving long-term sustainability for the Indonesian CSP system. The government budget required to implement this option is lower than that of the PAYG system. However, regarding adequacy, the DC scheme can provide a reasonable pension benefit, depending on factors such as the pension benefits formula, contribution rate, and investment returns. Consequently, a higher contribution rate, a larger pension base for calculating benefits, and better investment returns will collectively ensure a more comfortable pension for pensioners in the future.

Additionally, the DC scheme presents several risks that must be addressed, including investment risks. The Indonesian government should improve its investment strategies for pension fund management to enhance financial returns and mitigate the government's direct financial burden.

Sensitivity Analysis

The preceding sensitivity analysis estimated the impact of changing actuarial assumptions on the pension gap of the current Indonesian CSP system. In this section, the researcher uses sensitivity analysis to forecast how changing actuarial assumptions will influence the RR of the pension benefits under the new DC system if implemented.

Sensitivity analysis on the investment return

To measure the adequacy of the new DC scheme, the researcher simulated a sensitivity analysis to predict the RR of CSP pension benefits with an investment return rate from 1% to 6%, with the contribution rate of civil servants is constant at 10%.

<u>Options 1 – 4</u>

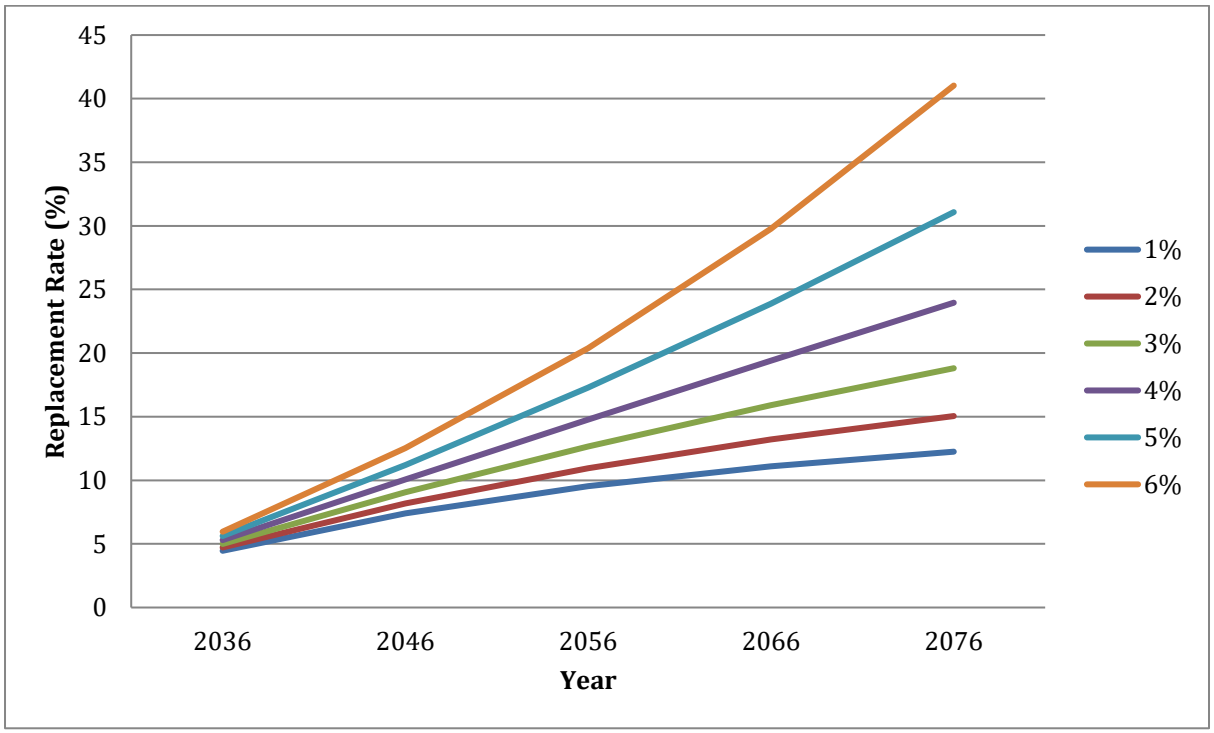
According to Figure 8, RR improves significantly with higher returns: with a 1% return, RR in 2076 is just 12.25%, but at a 6% return, RR in 2076 is a much healthier 41.03%. Between 2036 and 2076, higher-return scenarios result in higher RR growth: at 1% return, RR increases by 7.8 percentage points, while at 6% return, RR increases by around 35.1 percentage points. It demonstrates that investment return is among the most important determinants of benefit adequacy in DC schemes.

However, with a 1% or 2% return, RR remain much below 20%, which is insufficient for retirement. It indicates a significant sensitivity to market underperformance. In the actual world, such returns would require pensioners to rely more on family and social pensions or to keep working. DC schemes are quite sensitive to investment performance. As a result, cautious

asset allocation and guaranteed returns are required. Although higher returns significantly enhance adequacy, the RR of these decisions is only 41.03%, with an investment return of 6% in 2076 after 50 years of implementation. This finding validated the prior decision not to pursue options 1 - 4 for the new CSP system.

Figure 8.

Replacement Rate with Various Investment Return Rate for Options 1 – 4.[7]



Source: Author's work

Options 5 – 8

Option 5-8 will achieve significantly higher RR than Option 1-4 due to the pension benefits formula, which includes a performance allowance. According to Figure 9, the RR in 2036 is already above 11%, even with a 1% return, which is 2.5 times higher than in Options 1-4. In 2076, the RR reaches 30.63% (1% return) and 102.56% (6% return). By 2076, a 1% increase in return corresponds to a 6-10 percentage point rise in RR—compound return at work.

However, low returns remain risky. Even with higher assumptions, at a 1% return, the RR in 2076 is only 30.6%, which is insufficient for middle-income employees. Adequacy standards of 40-60% RR are only surpassed if returns exceed 4%. As a result, we can accept

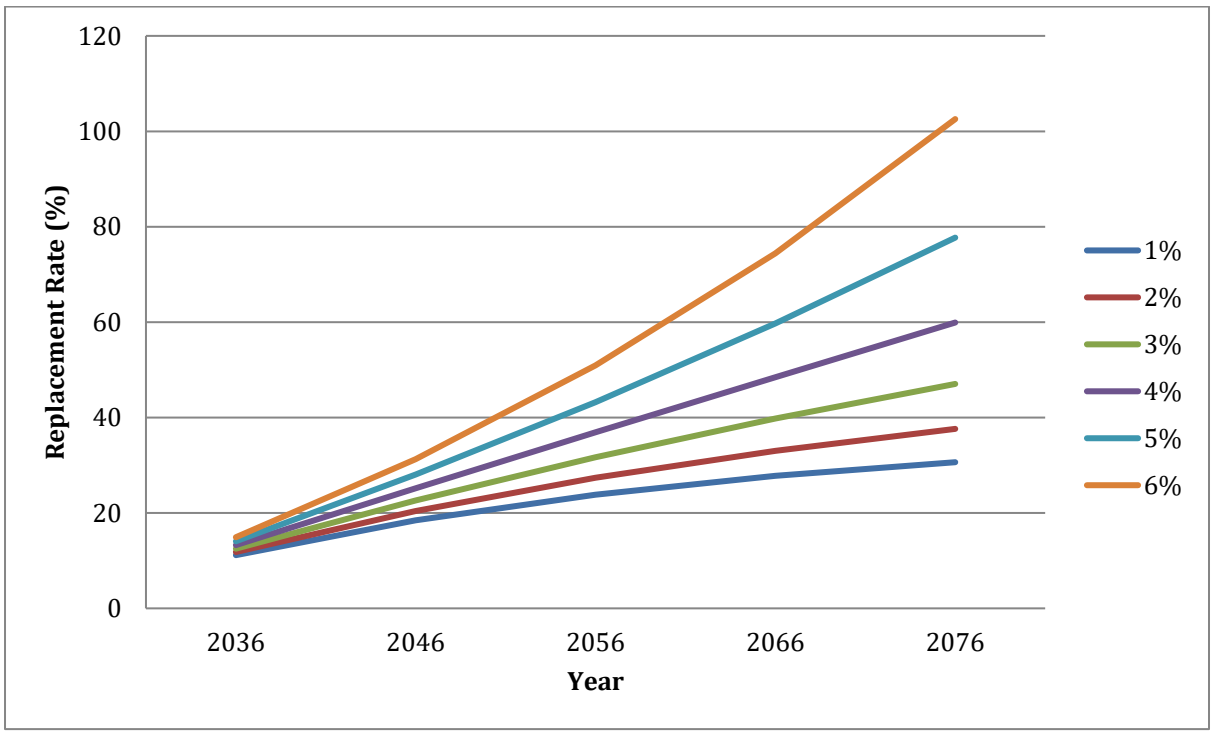
[7] For more detailed calculations, please refer to Appendix 5.

the hypothesis of this research, "H6: Investment return significantly impacts improving the adequacy of the Indonesian CSP system."

Options 5-8 have more significant pensions than Options 1-4, but they are still at risk from underperformance. Based on Figure 9, I found that a high RR is feasible with high returns. As a result, it encourages the Indonesian government to pursue long-term investment initiatives. In general, options 5-8 outperform options 1-4. As a result, I recommend applying options 5-8 as the basis for reform. However, these options require a real investment return of 4-5% or more to achieve a 50% RR.

Figure 9.

Replacement Rate with Various Investment Return Rate for Options 5 – 8.[8]



Source: Author's work

[8] For more detailed calculations, please refer to Appendix 5.

4.5. Reforms of the CSP System with the Various Risk Scenarios.

This part of the analysis answers the question: "Can Indonesia afford to reform its CSP system, considering the cost and benefit of reform with the various scenarios of risks?"

According to the simulation above and an interview with a Lead Economist of the World Bank and a Director of the budget regulation harmonization at the Ministry of Finance, the Indonesian Government can afford to reform the current CSP system from a DB scheme to a new scheme with several conditions:

1. The new scheme for a new civil servant.

According to the Lead Economist of the World Bank, the new scheme is better applied only to a new civil servant. If Indonesian wants to add a new scheme for the existing civil servants, then that would be a more immediate cost. The simulation predicts that the Indonesian Government will incur a large deficit or greater pension spending in the early to mid-stage phases of introducing the DC system for new civil servants. Nonetheless, government spending on pension payments is anticipated to be in surplus by 2046. As a result, the DC scheme gives the Indonesian CSP system the benefit of long-term sustainability. Compared to the PAYG system, this option requires a smaller government budget.

On the other hand, based on variables including the pension benefits formula, contribution rate, and investment results, the DC scheme may offer a respectable pension benefit in terms of adequacy. Therefore, a more comfortable pension for pensioners in the future will be ensured by a higher contribution rate, a larger pension base for calculating payments, and better investment returns. Furthermore, the Director of budget regulation harmonization at the Ministry of Finance argues that the Indonesian Government has not implemented pension reform because the ability of employees and the Regional Government to pay contributions is the Government's primary concern. He also wants the Regional Government to pay the contributions for pension expenditure.

2. Implement salary reform with pension reform.

The basic salary of civil servants as the pension base is too low. In contrast, the most significant component of the income of civil servants in several agencies when they are active is performance allowances, not their basic salary. There will be a significant decrease in income when they retire, especially civil servants who hold a high position. Therefore, the Director of Budget Regulation Harmonization at the Ministry of Finance believed salary reform should be

implemented before pension reform. However, the Lead Economist of the World Bank argued, "Ideally, I would like the Indonesian government to do both salary and pension reforms simultaneously" (Appendix 8). He also suggested the Indonesian Government include the allowances as part of the pension base and look at the total compensation for designing the best policy for civil servants: "Of folding in the allowances as part of the pensionable wage that is sort of a wage bill reform that has an impact on ultimate pension. So, the total compensation should be considered the incentives for CS to join and stay there" (Appendix 8).

3. Pension reform becomes the President's program priority.

Regarding the possibility of the Indonesian Government reforming the CSP system by considering the costs and benefits of reform with various risk scenarios, the Director of budget regulation harmonization at the Ministry of Finance mentioned: "It depends on the work program priorities decided by the President." He added, "The Ministry of Finance, with other related agencies, have created simulations with several existing scenarios. The scenario and its implications are being refined and will be presented at a limited cabinet meeting." In addition, he believed that "Apart from technical considerations, it is also necessary to study the implications from a political perspective. Support from parliament is necessary. It will influence whether the option is revolutionary or partial" (Appendix 7).

In summary, the following are the results of this research, which the researcher hopes can help the Indonesian government achieve the adequacy and sustainability of the CSP system.

Table 23.

Results of The Research.

	Research Goals	Data Used	Method Used	Result
Q1	How is the adequacy of the current Indonesian CSP system?	Primary data	Interviews	The research findings reveal that the current pension system provides an income that allows a reasonable RR based on the ILO standards. However, the problem is the low civil servants' salaries as the pension base; therefore, the pension benefit is too low to support retirees' cost of living.
Q2	How high are the risks of the unsustainability of the current CSP system?	- Primary data - Secondary data	- Interviews - Simulation	The government's financial contribution to the pension system has become a heavy burden, with pension payments increasing steadily over the past decade.
Q3	How can a more sustainable pension system be designed, and what is the cost?	Primary data	Interviews	The study proposes transitioning from a DB to a DC system to address these issues. A DC system would reduce pension liabilities. The study also recommends parametric reforms, such as increasing the retirement age, adjusting pension benefits based on salary history, and increasing employee contribution rates. Pension fund management should also be improved through better investment strategies to enhance financial returns and reduce the

				government's direct financial burden.
Q4	What are the benefits of the new pension system and what are the risks of achieving them?	- Primary data - Secondary data	- Interviews - Simulation	The study emphasizes that reforming Indonesia's CSP system is essential for achieving long-term financial sustainability. Transitioning to a DC system and implementing parametric reforms would help reduce pension liabilities, improve pension adequacy, and ensure the government can meet its future pension obligations.
Q5	Can Indonesia afford to reform its CSP system considering the cost and benefit of reform with the various risk scenarios?	- Primary data - Secondary data	- Interviews - Simulation	This study recommends that the new scheme be applied only to new civil servants; salary and pension reform should be implemented simultaneously and included as the Indonesian government's work program priorities. In addition, it is necessary to study the implications from a political perspective. Political and societal obstacles must be handled carefully to implement these reforms successfully.
H1	Increasing contribution rates positive impacts improving the long-term sustainability of	Secondary data	Simulation	Accepted

	the Indonesian CSP system.			
H2	Increasing retirement age positively impacts improving the long-term sustainability of the Indonesian CSP system.	Secondary data	Simulation	Accepted
H3	Increasing civil servants' salary negatively impacts improving the long-term sustainability of the Indonesian CSP system.	Secondary data	Simulation	Accepted
H4	Reforming the pension system from the DB scheme to the new scheme has a crucial role in achieving the long-term sustainability of the Indonesian CSP system.	Secondary data	Simulation	Accepted
H5	Changing the pension benefits	Secondary data	Simulation	Accepted

	formula positively impacts improving the adequacy of the Indonesian CSP system.			
H6	Investment return significantly impacts improving the adequacy of the Indonesian CSP system.	Secondary data	Simulation	Accepted

5 CONCLUSIONS

5.1. Conclusions

Indonesia's CSP system has recently shown low adequacy and sustainability. Regarding adequacy, the CSP benefits are inadequate to support pensioners' costs of living. Meanwhile, regarding sustainability, Indonesia's CSP system faces serious challenges because of unfunded liabilities. Consequently, Indonesia's government has to reform its CSP scheme to achieve sustainability and provide a decent pension benefit to all pensioners.

This study aimed to provide a strategy for developing more sustainable pension liabilities in Indonesia's CSP system. This objective is accomplished through the research findings. The finding from the first question is that the current pension system provides an income that allows a reasonable RR based on the ILO standards. However, the problem is the low civil servants' salaries as the pension base; hence, the average income is too low to allow the pensioners to save, and the level varies.

Although lifestyle factors and living environment also influence the fulfillment of the financial needs of pensioners, the most significant component of the income of civil servants in several agencies when they are active is performance allowances, not their basic salary. Therefore, there will be a significant decrease in income when they retire, especially civil servants who hold a high position. Therefore, adjustments in lifestyle patterns need to be made when transitioning from active to retired.

Due to the low RRs of the interviewees' pension benefits, most interviewees in Kapuas regency and Tasikmalaya city cannot meet their financial needs. All the interviewees believed their pensions could cover their basic needs, but only a few believed they could cover advanced needs. The perceptions of pensioners and civil servants in this research should be used to evaluate the adequacy of CSP. As a result, we would know how much pension benefits would be adequate to achieve the system's goals of preventing pensioners from becoming impoverished.

The finding from the second question is that the sustainability of the CSP system compared to GDP is relatively stable below 1%, as the percentage of government revenue is quite significant, around 6-8%. However, it is high compared to the employee's budget, around 30%. Meanwhile, according to the simulation, the researcher forecasted the pension spending of CSP benefits to be very large. These pension liabilities are a burden on future generations.

The medium and long-term CSP programs could pose risks if program reforms are not designed carefully; therefore, appropriate policies are needed.

The findings from a sensitivity analysis to predict the pension gap of CSP expenditure showed that the future pension gap decreases if the contribution rate increases. The increased contribution rate is expected to reduce the pension deficit compared to the baseline scenario. This pattern is explained by greater contribution rates enhancing pension revenue, resulting in a smaller pension gap. However, the CSP system is unsustainable in all contribution rate scenarios examined. At a 30% contribution rate, the shortfall is IDR 1,201 trillion by 2076. It indicates that increased contributions are lower rather than erasing the pension gap. The CSP system is still not fully funded since increasing contribution rates by six times (from 4.75% to 30%) only decreases the long-term shortfall by around 11% (from 1,345 trillion to 1,202 trillion IDR).

Meanwhile, according to the simulation, if the legal retirement age is prolonged further (the growth of civil service pensioners below 2%), the pension gap will be less than that of the baseline scenario (2%) in 2026, 2036, 2046, 2056, 2066 and 2076, assuming all other parameters remain constant. It shows that the long-term sustainability of the pension system is significantly enhanced by raising the minimum retirement age faster (lower pensioner growth rate). Regarding how much the salary rise of civil servants affects the pension gap of the CSP system, the simulation demonstrated that higher salary growth significantly increases the pension gap. In 2076, the pension shortfall will be IDR 8,468 trillion, assuming a 6.5% wage growth rate. It is more than six times greater than 1,345 trillion at a 2.5% pay increase.

Furthermore, the third question is whether pension program reform should be carried out to obtain a sustainable scheme in the long term and better pension benefits for civil service pensioners. Changes in the pension system have significant fiscal implications and are very long in duration and broad in scope. Therefore, the consideration must be comprehensive. Several things that need to be reviewed in designing a pension program are: the structure and components of civil servant income for pension base, civil servant mortality, program accountability development of investment instruments, the ability to pay contributions for civil servants as participants, and the government as the employer, amount of the RR, and income disparities between civil servants.

To fulfill the requirements above, the Indonesian government should do a combination of parametric and systemic reform at the same time. Some parametric reforms can be done, including increasing the contribution rate, raising the retirement age gradually, and automatically indexing pensions. Meanwhile, there are several alternatives of systemic reform,

to change the current DB scheme to a new scheme based on these policy choices: whether to restrict the scheme to new civil servants, whether to have a pure DC or a hybrid model, and whether to integrate with the national scheme.

The fourth question concerns the benefits and drawbacks of the new pension system and its risks. The NDC scheme has some advantages regarding the link between the contributions and the benefits, the incentives, and the automatic retirement age increase. However, the NDC scheme's drawback is that it does not solve the sustainability problem. The DC scheme limits the size of unfunded liability. However, Indonesia should consider the investment risk, a large budget for transition costs, and the higher contribution rate for implementing the DC scheme.

The simulation in this study demonstrated the substantial budget for transition costs for implementing the DC scheme towards reality. The simulation predicts that when the DC scheme is first introduced for new civil servants, the Indonesian government will have to spend more on pensions. Nonetheless, the government will have extra money to spend on pension payments in the future. As a result, the DC scheme gives the Indonesian CSP system the benefit of long-term sustainability. Compared to the PAYG system, this option requires less government budget to implement. On the other hand, the DC scheme might provide a decent pension benefit in terms of adequacy, depending on factors including the pension benefits formula, contribution rate, and investment outcomes. Therefore, a higher contribution rate, a broader pension base for calculating payments, and better investment returns will assure a more comfortable pension for pensioners in the future.

According to sensitivity analysis simulations, investment return is among the most crucial determinants of benefit adequacy in DC schemes. As a result, cautious asset allocation and guaranteed returns are required. Although higher returns significantly enhance adequacy, the RR of options 1-4 is only 41.03%, with an investment return of 6% in 2076 after 50 years of implementation. This finding validated the prior decision not to pursue options 1-4 for the new CSP system.

Option 5-8 will achieve significantly higher RR than Option 1-4 due to the pension benefits formula, which includes a performance allowance. However, low returns remain risky. Even with higher assumptions, at a 1% return, the RR in 2076 is only 30.6%, which is insufficient for middle-income employees. Adequacy standards of 40-60% RR are only surpassed if returns exceed 4%.

Options 5-8 have more significant pensions than Options 1-4, but they are still at risk from underperformance. The research found that a high RR is feasible with high returns. Therefore, it encourages the Indonesian government to pursue long-term investment initiatives.

In general, options 5-8 outperform options 1-4. However, these options require a real investment return of 4-5% or more to achieve a 50% RR.

The last or the fifth question is regarding Indonesia's affordability in reforming its CSP system, considering the cost and benefit of reform with the various risk scenarios. The Indonesian government can afford to reform the current CSP system from a DB scheme to a new scheme with several conditions. First, the new scheme is better applied only to a new civil servant. Second, the Indonesian government should also reform the civil service salary system, whether salary reform is implemented first or both salary reform and pension reform simultaneously. Third, pension reform becomes the work program priority of the president or government. Fourth, the necessary support from parliament.

According to the findings of all questions, the main research question: "How and whether is it possible to reform the current Indonesian CSP system to be more sustainable in the long term?" can be answered. The Indonesian government can reform the CSP system with several conditions. According to the results of the qualitative and quantitative analysis, the hypothesis of this research can be accepted.

Reforming the CSP system is an important step to ensure future pensioners' sustainability and welfare. Despite the challenges, with a careful and transparent approach, these reforms can bring significant benefits to civil servants and the sustainability of the state budget. Changing the CSP system from DB to new systems can reduce the burden on the national budget and provide cost certainty. However, this change also brings significant challenges, including uncertainty about civil servants' benefits and investment risks. With the proper measures, such as gradual transition and investment support, the government can better manage these changes and ensure the success of pension system reform.

Finally, this research provides a novel contribution to the literature and the development of the Indonesian CSP systems. The results of this research have the potential to be a valuable lesson. They could be a starting point for the Indonesian government (Indonesian policymakers) and other nations looking to improve their pension systems. Consequently, a pension system with excellent design will be achieved, and this research would benefit scholars worldwide by adding to the literature on the Indonesian pension system.

5.2. Recommendations

According to the research findings, Indonesia's CSP system is low in adequacy and sustainability since the CSP benefits are inadequate to support pensioners' living costs.

Indonesia's CSP system faces serious challenges because of unfunded liabilities. The researcher suggests Indonesia's government reform its CSP scheme to achieve sustainability and provide a decent pension benefit to all pensioners. This research provides a strategy for developing a CSP system that is more adequate and sustainable. Therefore, the research has several recommendations for the Indonesian government regarding pension reform of the CSP scheme:

1. The pension base of the CSP scheme should be changed from basic salary to performance allowances to improve its adequacy and provide an income that allows a reasonable RR based on the ILO standards.
2. The perceptions of pensioners and civil servants in this research should be used to evaluate the adequacy of CSP. As a result, we would know how much pension benefits would be adequate to achieve the system's goal of preventing pensioners from becoming impoverished.
3. Pension reform not only makes decisions about raising adequacy, but also without risking the CSP system's sustainability.
4. Although the sustainability of the CSP system compared to GDP is relatively low, as a percentage of government revenue, it is significant and relatively high compared to the employee budget. The research forecasts that the amount of pension spending on CSP benefits will be very large in the future and could be a burden on future generations. Therefore, with carefully designed and appropriate policies, pension reform should be implemented as soon as possible.
5. The Indonesian government should carry out measures to obtain a sustainable scheme in the long term and better pension benefits for civil service pensioners. Changes to the pension system have major fiscal implications, are very long in duration, and are very broad in scope. Therefore, the consideration must be comprehensive.
6. The Indonesian government should combine parametric and systemic reform at the same time.
7. The alternative to several new pension schemes has benefits, drawbacks, and risks. The Indonesian government could choose the best scheme that has more benefits, fewer drawbacks, and lower risks.
8. The Indonesian government can afford to reform the current CSP system from DB to a new scheme with several conditions: the new scheme is applied only for a new CS, the Indonesian government reforms the civil service salary system and pension reform simultaneously, and pension reform becomes the work program priorities of the president or government and gets support from parliament.

5.3. Limitations

The dissertation identifies several limitations that may impact the findings and their generalizability:

1. Data Availability and Scope

   The research is based on simulation and interview data from a limited sample of Indonesian civil servants and pensioners. Although the sample includes diverse respondents, it may not fully represent the broader population of Indonesian civil servants and pensioners. Additionally, the limited geographic coverage of the interview data further restricts the generalizability of the findings to other regions or sectors.

2. Assumption-Based Modeling

   The mathematical model used to simulate pension reform outcomes is built on several assumptions, including projections of future economic growth, demographic trends, and the stability of government policy. Any deviation from these assumptions could compromise the accuracy and reliability of the model's projections.

3. Political and Social Sensitivities

   Pension reform is a politically sensitive issue. The study emphasizes that successful reform requires strong political support from the government, parliament, and civil servants. However, political resistance and social unrest may delay or prevent the implementation of the proposed reforms.

4. Economic and Market Risks

   The suggested transition to a DC system exposes the pension system to market risks. Factors such as poor investment returns, economic downturns, and inflation could diminish the value of pension funds, potentially undermining the system's financial sustainability.

5. Transition Costs

   Transitioning from a DB system to a DC system involves significant financial and administrative costs. The research acknowledges that covering these expenses may strain the government's budget in the short to medium term, despite potential long-term benefits.

6. Behavioral and Institutional Barriers

   The study points out that changes in the pension structure could influence civil servants' behavior regarding retirement and savings. Institutional resistance, a lack of

understanding of the new system, and insufficient financial literacy among civil servants may hinder the successful implementation of the reforms.

These constraints indicate that although the suggested reforms present a route toward enhanced financial sustainability, effective execution will necessitate thoughtful policy formation, stakeholder involvement, and a flexible management approach.

6 NEW SCIENTIFIC RESULTS

The study presents several new scientific results that contribute to the field of pension reform and financial sustainability:

1. Simulation of a Mathematical Model for Pension Revenues and Expenditures for Indonesia.

   The research simulated a mathematical model to forecast pension revenues and expenditures in Indonesia's CSP system under a DC scheme. The model calculates pension revenues as the sum of civil servants' and government contributions, adjusted by the average annual THP and contribution rate. Pension expenditures are computed based on the number of pensioners and the yearly average pension rate. This approach provides a clearer projection of pension spending and funding requirements.

2. Simulation of Different Pension Reform Scenarios for Indonesia.
   The research introduces eight alternative pension reform scenarios, including combinations of DB and DC schemes, hybrid models, and integration with Indonesia's MPP. The simulation results highlight each approach's benefits, drawbacks, and risks, providing empirical evidence to support policymaking decisions.

3. Proposal for Combining Parametric and Systemic Reforms.
   A significant new finding is a recommendation to combine parametric (e.g., increasing retirement age, raising contribution rates, including performance allowances) and systemic reforms (e.g., transitioning to DC or hybrid schemes). This hybrid reform approach aims to achieve sustainability and adequacy in Indonesia's pension system.

4. Identification of Political and Economic Preconditions for Successful Reform in Indonesia.

   The study identifies key political and economic conditions required for successful pension reform, including salary reform, political support from parliament, and prioritization of pension reform in the government's work program. It suggests reform should start with new civil servants to minimize transition costs.

5. Quantitative Evidence Supporting Transition to a DC Scheme.
   The research provides quantitative evidence that transitioning to a DC scheme would

reduce the government's unfunded liabilities and improve the long-term sustainability of Indonesia's CSP system. The simulation shows that the highest financial pressure would occur around 15-25 years after implementation, after which the financial burden would gradually decrease.

These scientific results provide a comprehensive framework for pension reform in Indonesia, which could be applied to other developing countries facing similar pension system challenges.

7 SUMMARY

This study, titled "**Pension Reform in Indonesia: The Strategy to Reduce Pension Liabilities**," examines the challenges and strategies in reforming Indonesia's CSP system to achieve long-term financial sustainability. The research addresses the growing financial pressure on Indonesia's government due to the increasing pension burden and the inadequacy of pension benefits. The study aims to develop a strategy that balances the adequacy and sustainability of pension benefits while reducing the government's financial liability.

The study starts by highlighting public pension systems in perspective as crucial redistributive tools that have a significant impact on social justice and national budgets. Without disrupting labor markets, a well-designed pension plan must guarantee financial sustainability, intergenerational balance, and adequate income. However, political risk, demographic aging, and macroeconomic volatility result in more and more strain on pension systems around the world. Particularly, Indonesia is struggling with growing pension liabilities and an unsustainable CSP system. Pension adequacy is low in the nation, with benefits frequently falling short of regional minimum earnings, and spending rising by more than 137% between 2010 and 2020. Demographic changes, such as an increase in retirees brought on by past hiring trends and rising life expectancy, are making this financial strain worse and will continue to put more demand on the system over the next few decades.

The Indonesian government is considering switching to a DC system in light of this. Nevertheless, the shift presents difficult political, economic, and policy issues. The objective of the study is to provide a reform plan for Indonesia's CSP system that will lower pension liabilities while maintaining sustainability and adequacy. Given the author's firsthand expertise from previous government employment, the Indonesian situation offers other emerging countries a useful point of comparison. The study also fills the gap in the scholarly literature about Indonesia's CSP system.

The research focuses on whether and how the existing CSP system may be changed to become more sustainable for this study. The study sets out to answer five key research questions: (1) How is the adequacy of current Indonesian CSP system? (2) How high are the risks of the unsustainability of the current CSP system? (3) How can a more sustainable pension system be designed, and what are the costs? (4) What are the benefits of the new pension system, and what are the risks of achieving them? Moreover, (5) Can Indonesia afford to reform its CSP system, considering the cost and benefit of reform with the various risk scenarios?

Six hypotheses are proposed: that increasing the contribution rate improves sustainability (H1), increasing the retirement age improves sustainability (H2), increasing civil servants' salaries negatively impacts improving sustainability (H3), that transitioning from a DB to a new scheme is vital for long-term sustainability (H4), that revising the pension benefit formula enhances system adequacy (H5), and investment return impacts improving adequacy (H6). To address the research questions, the research adopts a mixed methods approach that combines quantitative (simulation) and qualitative (interviews) methods. Interviews were conducted with civil service pensioners, civil servants, and government officials, including representatives from the Ministry of Finance and the World Bank.

The literature review section provides an in-depth review of pension systems, emphasizing their characteristics, importance, design principles, and worldwide reform initiatives. The literature highlights the complexities of designing fair and financially viable pension systems. It also discusses pension modeling approaches relevant to existing systems and designing new ones, with a particular emphasis on the Indonesian CSP scheme. The literature emphasizes the importance of context-specific reforms that are influenced by economic factors, demographic realities, and global experiences.

The research design and data collection techniques were covered in detail in the materials and methods chapter. Using a mixed-methods research design, this study thoroughly examines the sustainability and adequacy of Indonesia's CSP system by combining qualitative and quantitative methodologies. Primary data were collected through in-depth interviews. Interviews were conducted with civil servant pensioners in Kapuas Regency and Tasikmalaya City, as well as with current civil servants and key institutional actors, including representatives from the Ministry of Finance and the World Bank. A total of 20 retirees, 14 civil servants, and 2 institutional experts were interviewed.

Secondary data were obtained from official government sources, including the Ministry of Finance, the NCSA, PT Taspen, and a World Bank report. These data informed the development of a simulation model to evaluate pension reform scenarios. The model addresses three core dimensions: long-term financial sustainability, the impact of pension system rule modifications, and the adequacy of pension benefits under the new scheme. The simulation methodology, based on the PAYG model, combines macroeconomic and microeconomic variables to predict pension system outcomes under alternative reform options. Specifically, the methodology explores the impact of changes in contribution rates, benefit formulas, and eligibility provisions. Overall, the methodological framework ensures that this research

captures diverse perspectives while allowing for a robust analysis of the empowerment of financial reform and pension policy in Indonesia.

The research findings reveal that Indonesia's CSP system is inadequate and financially unsustainable. Pension benefits are too low to support pensioners' cost of living, especially for mid-to-high-level civil servants. The government's financial contribution to the pension system has become a heavy burden, with pension payments increasing steadily over the past decade. The study proposes transitioning from a DB to a DC system to address these issues. A DC system would reduce pension liabilities and shift the financial burden from the government to individual contributors. The study also recommends parametric reforms, such as increasing the retirement age, adjusting pension benefits based on salary history, and increasing employee contribution rates. Pension fund management should also be improved through better investment strategies to enhance financial returns and reduce the government's direct financial burden.

In conclusion, the study emphasizes that reforming Indonesia's CSP system is essential for achieving long-term financial sustainability. Transitioning to a DC system and implementing parametric reforms would help reduce pension liabilities, improve pension adequacy, and ensure the government can meet its future pension obligations. However, political and societal obstacles must be handled carefully to guarantee that these reforms are implemented successfully. This research provides valuable insights for policymakers in Indonesia and other developing countries facing similar pension system challenges.

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9 APPENDICES

Appendix 1: Interview Questions for Civil Service Pensioners

Interview Questions for Civil Service Pensioners

I appreciate your willingness to participate in this research project. My name is Abdul Hadi, and I am a doctoral student in economics at the Doctoral School of Economics and Regional Sciences, Hungarian University of Agriculture and Life Sciences, Hungary. This research project will contribute to my Ph.D. dissertation.
This interview seeks to understand the concerns and hopes of civil servants regarding the civil servant pension system in Indonesia. The duration of the interview approximately 30 minutes to 1 hour. I will record the interview and write it up.
This research is confidential. I will know your identity; however, your name and position will not be disclosed in any reports, presentations, or public documentation. Only my supervisor and I will read the interview notes or transcript. Interview transcripts will be used in my Ph.D. dissertation and academic papers (papers or articles) and will be stored securely and destroyed 5-10 years after the end of the research.

1. Where do you currently live?
2. How long have you been retired?
3. What was your last rank before retiring from civil service?
4. What was your last position before retiring from civil service?
5. How long have you worked as a civil servant?
6. Can you tell us about your previous job (e.g., how long did you work, what was the nature of your work)?
7. How would you describe your current daily life (emotionally and financially)?
8. Did you think about your retirement life while working as a civil servant?
9. Did you prepare for your retirement life while working as a civil servant?
10. Why (or not) did you do it? If Yes (preparing for your retirement), how do you do it?
11. What do you know about the current pension policy? How did you learn about the pension policy?
12. What do you think about the current pension policy? Why do you think so?
13. What do you think about the current amount of civil service pension contributions?
14. What do you think about the adequacy of the current amount of pension benefits?
15. What do you think about the fairness (justice) of the current civil service pension program? Why is that?
16. In your opinion, what should be the goal of the pension policy?
17. Why do you think the pension policy should have such a goal?
18. To what extent can your monthly pension cover your material needs?
19. Do you work after retirement? If yes, what percentage is your current pension compared to your current total income?
20. What percentage of your current pension is compared to your total income while working as a civil servant?
21. Do you receive material support from your family members, including children?
22. If you receive material support from your family members, how much do they support you?
23. Do you provide material support such as food, money, and accommodation to your family members, including children? How much and regularly?
24. Do you have your own accommodation to live in your old age?

25. Is there anything else you would like to share about your experience of civil servant retirement?

If you have any questions, either now or in the future, please do not hesitate to contact:
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Telepon: +36205977908, +6282213080558.
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Appendix 2: Interview Questions for Civil Servants

Interview Questions for Civil Servants

I appreciate your willingness to participate in this research project. My name is Abdul Hadi, and I am a doctoral student in economics at the Doctoral School of Economics and Regional Sciences, Hungarian University of Agriculture and Life Sciences, Hungary. This research project will contribute to my Ph.D. dissertation.
This interview seeks to understand the concerns and hopes of civil servants regarding the civil servant pension system in Indonesia. The duration of the interview approximately 30 minutes to 1 hour. I will record the interview and write it up.
This research is confidential. I will know your identity; however, your name and position will not be disclosed in any reports, presentations, or public documentation. Only my supervisor and I will read the interview notes or transcript. Interview transcripts will be used in my Ph.D. dissertation and academic papers (papers or articles) and will be stored securely and destroyed 5-10 years after the end of the research.

1. Name:
2. Gender:
3. Status:
4. Where do you currently live?
5. How long have you worked as a civil servant?
6. What agency do you currently serve in?
7. How old are you now?
8. What is your current rank as a civil servant?
9. What is your current position as a civil servant?
10. Can you tell us about your current job (e.g., what is the nature of your work)?
11. How would you describe your daily life now?
12. What do you think about the current civil service pension system?
13. What do you think the objectives of the civil service pension system should be?
14. Why do you think the civil servant pension system should have this goal?
15. What is your opinion about the adequacy of the current civil servant pension benefits?
16. What do you think about the current civil service salary system?
17. What do you think about the relationship/connection between civil service salaries and civil service pensions currently?
18. What do you think about the current formula for calculating the amount of civil service pension benefits (2.5% x length of service x last salary)?
19. What do you think about the current amount of civil service pension contributions (which are deducted from civil servant salaries) (4.75%)?
20. What do you think if civil service pension contributions are increased so that it will increase the amount of pension benefits?
21. What do you think about the current retirement age limit (BUP) for civil servants?
22. What do you think about the civil service pension budget in the APBN?
23. What do you think if the civil service pension budget is also covered by the APBD?
24. What do you think about the current plans to reform the civil service pension system?
25. What do you think if the government replaces the current civil service pension system (defined benefits)?
26. How do you envision your future retirement (financially)?
27. In your opinion, what percentage will your pension be compared to your total income while working as a civil servant currently?

28. To what extent do you think your monthly pension will be able to cover your material needs?
29. How do you think about your retirement life when you no longer work as a civil servant?
30. How do you plan to prepare for your retirement life while working as a civil servant?
31. Do you plan to work after retirement as a civil servant?
32. Is there anything else you would like to tell us about the civil service pension system?

If you have any questions, either now or in the future, please contact:
Abdul Hadi
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Appendix 3: Interview Questions for Director of Budget Regulation Harmonization, Ministry of Finance of Republic of Indonesia

Interview Questions

Source: Director General of Budget, Ministry of Finance

Adequacy

1. In your opinion, how adequate is the civil servant pension system in Indonesia?
2. How to increase its adequacy?
3. How much will the Indonesian government's budget increase to meet this adequacy?

Sustainability

1. In your opinion, how sustainable is the civil servant pension system in Indonesia?
   a. compared to GDP?
   b. compared to the personnel expenditure budget in the APBN?
2. How big is the risk of unsustainability of the current civil servant pension system?
3. How to design a more sustainable pension system? What and how much does it cost?

Pension Reforms

1. The ASN Law stipulates that the Indonesian government must reform the civil servant pension system. In your opinion, does Indonesia need to reform the civil servant pension system?
2. Why hasn't the Indonesian government implemented pension reform? What are the obstacles to doing so?
3. Which is better, partial reform (not changing the existing system) or comprehensive pension reform (changing the system) for Indonesia?
4. What are the benefits if Indonesia changes its pension scheme from defined benefit to defined contribution? What are the risks/probabilities of the new pension system?
5. Can Indonesia reform the civil servant pension system by considering the costs and benefits of reform with various risk scenarios?
6. Has the Ministry of Finance carried out fiscal simulations for changes to the pension system? What are the results of the simulation?

Appendix 4: Interview Questions for a Lead Economist of the World Bank

Interview Questions

Mr. Robert Palacios

(A World Bank Lead Economist)

Adequacy

1. What do you think is the adequacy of the Indonesian civil service pension system?
2. How does it improve its adequacy when the government has a low budget?

Sustainability

1. How do you think the sustainability of the Indonesian civil service pension system:
   a. compares to GDP?
   b. compares to the civil service pension budget in the APBN (Indonesian Budget)?
2. What are the risks of the unsustainability of the current Indonesian civil service pension system?
3. How do you design a more sustainable pension system? What and how much is the cost?
4. How can we balance the adequacy and sustainability of the civil service pension system?

Pension Reform

1. ASN Law regulates that the Indonesian government has to reform the civil service pension system. Do you think Indonesia needs to reform its civil service pension system? What are the recommendations of the World Bank to the Indonesian government?
2. Why has the government of Indonesia not done the pension reform? What are the barriers to doing it?
3. Which is better, a partial reform or a comprehensive pension reform for Indonesia?
4. What are the benefits if Indonesia changes the pension scheme from defined benefit to defined contribution? What are the risks and probabilities of the new pension system (defined contribution)?
5. Can Indonesia afford to reform its civil service pension system, considering the cost and benefit of reform and the various scenarios of risks?

Appendix 5: Sensitivity Analysis Result

Current CSP System (DB Scheme)

a. Pension gap under various contribution rate (trillion IDR)

Year	Contribution rates					
	4.75%	10.00%	15.00%	20.00%	25.00%	30.00%
2026	140.50	131.82	123.55	115.28	107.02	98.75
2036	221.44	210.33	199.74	189.16	178.58	167.99
2046	348.35	334.13	320.58	307.03	293.49	279.94
2056	547.18	528.97	511.63	494.29	476.95	459.61
2066	858.45	835.14	812.94	790.75	768.55	746.35
2076	1,345.45	1,315.62	1,287.20	1,258.79	1,230.37	1,201.95

b. Pension gap under various salary growth rate (trillion IDR)

Year	Salary growth rates				
	2.50%	3.50%	4.50%	5.50%	6.50%
2026	140.50	141.87	143.24	144.61	145.98
2036	221.44	246.40	273.88	304.13	337.39
2046	348.35	427.14	522.71	638.44	778.32
2056	547.18	739.34	996.09	1,338.19	1,792.79
2066	858.45	1,278.18	1,895.85	2,801.48	4,124.50
2076	1,345.45	2,207.54	3,604.81	5,859.04	8,468.39

c. Pension gap under various retirement age growth (trillion IDR)

Year	Salary growth rates				
	0.50%	1.00%	1.50%	2.00%	2.50%
2026	138.32	139.04	139.77	140.50	141.23
2036	186.63	197.66	221.44	221.44	234.23
2046	251.77	280.84	312.94	348.35	387.42
2056	339.61	398.84	467.54	547.18	639.44
2066	458.05	566.16	697.96	858.45	1,053.71
2076	617.70	803.39	1,041.21	1,345.45	1,734.19

New Scheme (DC Scheme)

a. Replacement Rate with Various Investment Return Rate for Options 1 – 4

Year	Investment return rate					
	1%	2%	3%	4%	5%	6%
2036	4.46%	4.72%	5.00%	5.30%	5.62%	5.96%
2046	7.39%	8.17%	9.05%	10.06%	11.21%	12.52%
2056	9.53%	10.95%	12.67%	14.76%	17.28%	20.37%
2066	11.10%	13.22%	15.91%	19.39%	23.89%	29.77%
2076	12.25%	15.05%	18.81%	23.96%	31.08%	41.03%

b. Replacement Rate with Various Investment Return Rate for Options 5 – 8

Year	Investment return rate					
	1%	2%	3%	4%	5%	6%
2036	11.15%	11.81%	12.51%	13.26%	14.06%	14.91%
2046	18.46%	20.41%	22.63%	25.15%	28.02%	31.29%
2056	23.82%	27.39%	31.69%	36.89%	43.21%	50.91%
2066	27.75%	33.04%	39.79%	48.47%	59.73%	74.41%
2076	30.63%	37.62%	47.04%	59.91%	77.71%	102.56%

Appendix 6a: Prediction of CSP Benefits with DC Scheme for Option 1 (IDR)

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%											
Year 0	2026	25	3,541,907	5,312,860	8,854,767	2,125,144	4,250,288	6,375,432	-	-	6,694,204	390,495	32,541	106,257,207	0.00
Year 1	2027	26	3,630,455	5,445,682	9,076,136	2,178,273	4,356,545	6,534,818	334,710	-	13,890,473	810,278	67,523	108,913,637	0.01
Year 2	2028	27	3,721,216	5,581,824	9,303,040	2,232,730	4,465,459	6,698,189	694,524	-	21,618,095	1,261,056	105,088	111,636,478	0.01
Year 3	2029	28	3,814,246	5,721,369	9,535,616	2,288,548	4,577,096	6,865,643	1,080,905	-	29,907,925	1,744,629	145,386	114,427,390	0.02
Year 4	2030	29	3,909,602	5,864,404	9,774,006	2,345,761	4,691,523	7,037,284	1,495,396	-	38,792,470	2,262,894	188,575	117,288,075	0.02
Year 5	2031	30	4,007,343	6,011,014	10,018,356	2,404,406	4,808,811	7,213,217	1,939,624	-	48,305,971	2,817,848	234,821	120,220,276	0.02
Year 6	2032	31	4,107,526	6,161,289	10,268,815	2,464,516	4,929,031	7,393,547	2,415,299	-	58,484,494	3,411,595	284,300	123,225,783	0.03
Year 7	2033	32	4,210,214	6,315,321	10,525,536	2,526,129	5,052,257	7,578,386	2,924,225	-	69,366,024	4,046,351	337,196	126,306,428	0.03
Year 8	2034	33	4,315,470	6,473,204	10,788,674	2,589,282	5,178,564	7,767,845	3,468,301	-	80,990,563	4,724,449	393,704	129,464,089	0.04
Year 9	2035	34	4,423,356	6,635,035	11,058,391	2,654,014	5,308,028	7,962,041	4,049,528	-	93,400,234	5,448,347	454,029	132,700,691	0.04
Year 10	2036	35	4,533,940	6,800,910	11,334,851	2,720,364	5,440,728	8,161,092	4,670,012	-	106,639,393	6,220,631	518,386	136,018,208	0.05
Year 11	2037	36	4,647,289	6,970,933	11,618,222	2,788,373	5,576,747	8,365,120	5,331,970	-	120,754,739	7,044,026	587,002	139,418,663	0.05
Year 12	2038	37	4,763,471	7,145,206	11,908,677	2,858,083	5,716,165	8,574,248	6,037,737	-	135,795,436	7,921,400	660,117	142,904,130	0.06
Year 13	2039	38	4,882,558	7,323,837	12,206,394	2,929,535	5,859,069	8,788,604	6,789,772	-	151,813,242	8,855,772	737,981	146,476,733	0.06
Year 14	2040	39	5,004,622	7,506,933	12,511,554	3,002,773	6,005,546	9,008,319	7,590,662	-	168,862,639	9,850,321	820,860	150,138,651	0.07
Year 15	2041	40	5,129,737	7,694,606	12,824,343	3,077,842	6,155,685	9,233,527	8,443,132	-	187,000,974	10,908,390	909,033	153,892,118	0.07
Year 16	2042	41	5,257,981	7,886,971	13,144,952	3,154,788	6,309,577	9,464,365	9,350,049	-	206,288,606	12,033,502	1,002,792	157,739,421	0.08
Year 17	2043	42	5,389,430	8,084,145	13,473,576	3,233,658	6,467,316	9,700,974	10,314,430	-	226,789,060	13,229,362	1,102,447	161,682,906	0.08
Year 18	2044	43	5,524,166	8,286,249	13,810,415	3,314,500	6,628,999	9,943,499	11,339,453	-	248,569,187	14,499,869	1,208,322	165,724,979	0.09
Year 19	2045	44	5,662,270	8,493,405	14,155,675	3,397,362	6,794,724	10,192,086	12,428,459	-	271,699,336	15,849,128	1,320,761	169,868,103	0.09
Year 20	2046	45	5,803,827	8,705,740	14,509,567	3,482,296	6,964,592	10,446,888	13,584,967	-	296,253,536	17,281,456	1,440,121	174,114,806	0.10
Year 21	2047	46	5,948,923	8,923,384	14,872,306	3,569,354	7,138,707	10,708,061	14,812,677	-	322,309,676	18,801,398	1,566,783	178,467,676	0.11
Year 22	2048	47	6,097,646	9,146,468	15,244,114	3,658,587	7,317,175	10,975,762	16,115,484	-	349,949,710	20,413,733	1,701,144	182,929,368	0.11
Year 23	2049	48	6,250,087	9,375,130	15,625,217	3,750,052	7,500,104	11,250,156	17,497,486	-	379,259,860	22,123,492	1,843,624	187,502,602	0.12
Year 24	2050	49	6,406,339	9,609,508	16,015,847	3,843,803	7,687,607	11,531,410	18,962,993	-	410,330,833	23,935,965	1,994,664	192,190,167	0.12
Year 25	2051	50	6,566,497	9,849,746	16,416,243	3,939,898	7,879,797	11,819,695	20,516,542	-	443,258,055	25,856,720	2,154,727	196,994,921	0.13
Year 26	2052	51	6,730,660	10,095,990	16,826,650	4,038,396	8,076,792	12,115,188	22,162,903	-	478,141,905	27,891,611	2,324,301	201,919,794	0.14
Year 27	2053	52	6,898,926	10,348,389	17,247,316	4,139,356	8,278,712	12,418,067	23,907,095	-	515,087,971	30,046,798	2,503,900	206,967,789	0.15
Year 28	2054	53	7,071,399	10,607,099	17,678,499	4,242,840	8,485,679	12,728,519	25,754,399	-	554,207,314	32,328,760	2,694,063	212,141,984	0.15
Year 29	2055	54	7,248,184	10,872,277	18,120,461	4,348,911	8,697,821	13,046,732	27,710,366	-	595,616,749	34,744,310	2,895,359	217,445,534	0.16
Year 30	2056	55	7,429,389	11,144,084	18,573,473	4,457,633	8,915,267	13,372,900	29,780,837	-	639,439,131	37,300,616	3,108,385	222,881,672	0.17
Year 31	2057	56	7,615,124	11,422,686	19,037,809	4,569,074	9,138,149	13,707,223	31,971,957	-	685,803,672	40,005,214	3,333,768	228,453,714	0.18
Year 32	2058	57	7,805,502	11,708,253	19,513,755	4,683,301	9,366,602	14,049,903	34,290,184	-	734,846,254	42,866,031	3,572,169	234,165,057	0.18
Year 33	2059	58	8,000,639	12,000,959	20,001,599	4,800,384	9,600,767	14,401,151	36,742,313	-	786,709,775	45,891,404	3,824,284	240,019,183	0.19
Year 34	2060	59	8,200,655	12,300,983	20,501,639	4,920,393	9,840,787	14,761,180	39,335,489	-	841,544,503	49,090,096	4,090,841	246,019,663	0.20
Year 35	2061	60	8,405,672	12,608,508	21,014,180	5,043,403	10,086,806	15,130,209	42,077,225	-	899,508,448	52,471,326	4,372,611	252,170,154	0.21
Year 36	2062	61	8,615,814	12,923,720	21,539,534	5,169,488	10,338,976	15,508,464	44,975,422	-	960,767,758	56,044,786	4,670,399	258,474,408	0.22
Year 37	2063	62	8,831,209	13,246,813	22,078,022	5,298,725	10,597,451	15,896,176	48,038,388	-	1,025,497,131	59,820,666	4,985,055	264,936,268	0.23
Year 38	2064	63	9,051,989	13,577,984	22,629,973	5,431,193	10,862,387	16,293,580	51,274,857	-	1,093,880,247	63,809,681	5,317,473	271,559,675	0.23
Year 39	2065	64	9,278,289	13,917,433	23,195,722	5,566,973	11,133,947	16,700,920	54,694,012	-	1,166,110,225	68,023,096	5,668,591	278,348,667	0.24
Year 40	2066	65	9,510,246	14,265,369	23,775,615	5,706,148	11,412,295	17,118,443	58,305,511	-	1,242,390,101	72,472,756	6,039,396	285,307,383	0.25
Year 41	2057	66	9,748,002	14,622,003	24,370,006	5,848,801	11,697,603	17,546,404	62,119,505	-	1,322,933,331	77,171,111	6,430,926	292,440,068	0.26
Year 42	2058	67	9,991,702	14,987,553	24,979,256	5,995,021	11,990,043	17,985,064	66,146,667	-	1,407,964,315	82,131,252	6,844,271	299,751,070	0.27
Year 43	2059	68	10,241,495	15,362,242	25,603,737	6,144,897	12,289,794	18,434,691	70,398,216	-	1,497,718,956	87,366,939	7,280,578	307,244,847	0.28
Year 44	2060	69	10,497,532	15,746,298	26,243,831	6,298,519	12,597,039	18,895,558	74,885,948	-	1,592,445,240	92,892,639	7,741,053	314,925,968	0.29
Year 45	2061	70	10,759,971	16,139,956	26,899,926	6,455,982	12,911,965	19,367,947	79,622,262	-	1,692,403,846	98,723,558	8,226,963	322,799,117	0.31
Year 46	2062	71	11,028,970	16,543,455	27,572,425	6,617,382	13,234,764	19,852,146	84,620,192	-	1,797,868,791	104,875,679	8,739,640	330,869,095	0.32
Year 47	2063	72	11,304,694	16,957,041	28,261,735	6,782,816	13,565,633	20,348,449	89,893,440	-	1,909,128,103	111,365,806	9,280,484	339,140,822	0.33
Year 48	2064	73	11,587,311	17,380,967	28,968,279	6,952,387	13,904,774	20,857,161	95,456,405	-	2,026,484,526	118,211,597	9,850,966	347,619,343	0.34
Year 49	2065	74	11,876,994	17,815,491	29,692,486	7,126,197	14,252,393	21,378,590	101,324,226	-	2,150,256,272	125,431,616	10,452,635	356,309,826	0.35
Year 50	2066	75	12,173,919	18,260,879	30,434,798	7,304,351	14,608,703	21,913,054	107,512,814	-	2,280,777,792	133,045,371	11,087,114	365,217,572	0.36

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	532,150,967,540	1,064,301,935,079	1,596,452,902,619	-	-	1,676,275,547,750	390,495	32,541	106,257,207	0.00
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	545,454,741,728	1,090,909,483,456	1,636,364,225,185	83,813,777,388	27,379,167,280	3,450,892,594,301	803,900	66,992	108,913,637	0.01
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	559,091,110,271	1,118,182,220,543	1,677,273,330,814	172,544,629,715	56,364,579,040	5,328,209,642,331	1,241,228	103,436	111,636,478	0.01
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	573,068,388,028	1,146,136,776,056	1,719,205,164,085	266,410,482,117	87,027,424,158	7,312,758,122,578	1,703,537	141,961	114,427,390	0.01
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	587,395,097,729	1,174,790,195,458	1,762,185,293,187	365,637,906,129	119,441,716,002	9,409,248,870,551	2,191,923	182,660	117,288,075	0.02
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	602,079,975,172	1,204,159,950,344	1,806,239,925,516	470,462,443,528	153,684,398,219	11,622,578,837,652	2,707,527	225,627	120,220,276	0.02
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	617,131,974,551	1,234,263,949,103	1,851,395,923,654	581,128,941,883	189,835,454,348	13,957,838,045,023	3,251,535	270,961	123,225,783	0.03
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	632,560,273,915	1,265,120,547,830	1,897,680,821,746	697,891,902,251	227,978,021,402	16,420,316,788,705	3,825,180	318,765	126,306,428	0.03
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	648,374,280,763	1,296,748,561,526	1,945,122,842,289	821,015,839,435	268,198,507,549	19,015,513,104,995	4,429,741	369,145	129,464,089	0.03
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	664,583,637,782	1,329,167,275,564	1,993,750,913,346	950,775,655,250	310,586,714,048	21,749,140,505,211	5,066,551	422,213	132,700,691	0.04
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	681,198,228,727	1,362,396,457,453	2,043,594,686,180	1,087,457,025,261	355,235,961,585	24,627,135,989,375	5,736,992	478,083	136,018,208	0.04
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	698,228,184,445	1,396,456,368,890	2,094,684,553,335	1,231,356,799,469	402,243,221,160	27,655,668,348,685	6,442,501	536,875	139,418,663	0.05
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	715,683,889,056	1,431,367,778,112	2,147,051,667,168	1,382,783,417,434	451,709,249,695	30,841,146,766,951	7,184,571	598,714	142,904,130	0.05
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	733,575,986,282	1,467,151,972,565	2,200,727,958,847	1,542,057,338,348	503,738,730,527	34,190,229,731,561	7,964,754	663,729	146,476,733	0.05
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	751,915,385,939	1,503,830,771,879	2,255,746,157,818	1,709,511,486,578	558,440,418,949	37,709,834,264,900	8,784,660	732,055	150,138,651	0.06
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	770,713,270,588	1,541,426,541,176	2,312,139,811,764	1,885,491,713,245	615,927,292,993	41,407,145,487,503	9,645,964	803,830	153,892,118	0.06
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	789,981,102,353	1,579,962,204,705	2,369,943,307,058	2,070,357,274,375	676,316,709,629	45,289,626,524,660	10,550,403	879,200	157,739,421	0.07
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	809,730,629,911	1,619,461,259,823	2,429,191,889,734	2,264,481,326,233	739,730,566,569	49,365,028,768,545	11,499,785	958,315	161,682,906	0.07
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	829,973,895,659	1,659,947,791,318	2,489,921,686,978	2,468,251,438,427	806,295,469,886	53,641,402,508,412	12,495,984	1,041,332	165,724,979	0.08
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	850,723,243,051	1,701,446,486,101	2,552,169,729,152	2,682,070,125,421	876,142,907,637	58,127,107,941,805	13,540,947	1,128,412	169,868,103	0.08
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	871,991,324,127	1,743,982,648,254	2,615,973,972,381	2,906,355,397,090	949,409,429,716	62,830,826,580,179	14,636,698	1,219,725	174,114,806	0.08
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	893,791,107,230	1,787,582,214,460	2,681,373,321,691	3,141,541,329,009	1,026,236,834,143	67,761,573,062,821	15,785,335	1,315,445	178,467,676	0.09
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	916,135,884,911	1,832,271,769,822	2,748,407,654,733	3,388,078,653,141	1,106,772,360,026	72,928,707,393,405	16,989,040	1,415,753	182,929,368	0.09
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	939,039,282,034	1,878,078,564,067	2,817,117,846,101	3,646,435,369,670	1,191,168,887,426	78,341,947,614,056	18,250,077	1,520,840	187,502,602	0.10
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	962,515,264,085	1,925,030,528,169	2,887,545,792,254	3,917,097,380,703	1,279,585,144,363	84,011,382,932,262	19,570,795	1,630,900	192,190,167	0.10
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	986,578,145,687	1,973,156,291,373	2,959,734,437,060	4,200,569,146,613	1,372,185,921,227	89,947,487,316,561	20,953,635	1,746,136	196,994,921	0.11
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	1,011,242,599,329	2,022,485,198,658	3,033,727,797,986	4,497,374,365,828	1,469,142,292,837	96,161,133,577,438	22,401,129	1,866,761	201,919,794	0.11
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	1,036,523,664,312	2,073,047,328,624	3,109,570,992,936	4,808,056,678,872	1,570,631,848,431	102,663,607,950,461	23,915,907	1,992,992	206,967,789	0.12
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	1,062,436,755,920	2,124,873,511,840	3,187,310,267,760	5,133,180,397,523	1,676,838,929,858	109,466,625,199,274	25,500,697	2,125,058	212,141,984	0.12
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	1,088,997,674,818	2,177,995,349,636	3,266,993,024,454	5,473,331,259,964	1,787,954,878,255	116,582,344,256,659	27,158,333	2,263,194	217,445,534	0.12
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	1,116,222,616,688	2,232,445,233,377	3,348,667,850,065	5,829,117,212,833	1,904,178,289,525	124,023,384,422,535	28,891,754	2,407,646	222,881,672	0.13
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	1,144,128,182,105	2,288,256,364,211	3,432,384,546,316	6,201,169,221,127	2,025,715,278,901	131,802,842,138,392	30,704,010	2,558,668	228,453,714	0.13
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	1,172,731,386,658	2,345,462,773,316	3,518,194,159,974	6,590,142,106,920	2,152,779,754,927	139,934,308,358,358	32,598,269	2,716,522	234,165,057	0.14
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	1,202,049,671,325	2,404,099,342,649	3,606,149,013,974	6,996,715,417,918	2,285,593,703,187	148,431,886,537,762	34,577,814	2,881,485	240,019,183	0.14
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	1,232,100,913,108	2,464,201,826,215	3,696,302,739,323	7,421,594,326,888	2,424,387,480,117	157,310,211,260,822	36,646,056	3,053,838	246,019,663	0.15
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	1,262,903,435,935	2,525,806,871,871	3,788,710,307,806	7,865,510,563,041	2,569,400,117,260	166,584,467,529,800	38,806,532	3,233,878	252,170,154	0.15
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	1,294,476,021,834	2,588,952,043,668	3,883,428,065,501	8,329,223,376,490	2,720,879,636,320	176,270,410,738,746	41,062,912	3,421,909	258,474,408	0.16
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	1,326,837,922,380	2,653,675,844,759	3,980,513,767,139	8,813,520,536,937	2,879,083,375,400	186,384,387,355,780	43,419,004	3,618,250	264,936,268	0.16
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	1,360,008,870,439	2,720,017,740,878	4,080,026,611,317	9,319,219,367,789	3,044,278,326,811	196,943,356,338,641	45,878,759	3,823,230	271,559,675	0.17
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	1,394,009,092,200	2,788,018,184,400	4,182,027,276,600	9,847,167,816,932	3,216,741,486,864	207,964,911,309,139	48,446,275	4,037,190	278,348,667	0.17
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	1,428,859,319,505	2,857,718,639,010	4,286,577,958,515	10,398,245,565,457	3,396,760,218,049	219,467,303,512,987	51,125,805	4,260,484	285,307,383	0.18
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	1,464,580,802,493	2,929,161,604,985	4,393,742,407,478	10,973,365,175,649	3,584,632,624,045	231,469,465,592,443	53,921,757	4,493,480	292,440,068	0.18
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	1,501,195,322,555	3,002,390,645,110	4,503,585,967,665	11,573,473,279,622	3,780,667,938,010	243,991,036,200,104	56,838,708	4,736,559	299,751,070	0.19
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	1,538,725,205,619	3,077,450,411,238	4,616,175,616,857	12,199,551,810,005	3,985,186,924,602	257,052,385,483,207	59,881,403	4,990,117	307,244,847	0.19
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	1,577,193,335,759	3,154,386,671,519	4,731,580,007,278	12,852,619,274,160	4,198,522,296,226	270,674,641,468,783	63,054,763	5,254,564	314,925,968	0.20
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	1,616,623,169,153	3,233,246,338,307	4,849,869,507,460	13,533,732,073,439	4,421,019,143,990	284,879,717,381,066	66,363,894	5,530,324	322,799,117	0.21
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	1,657,038,748,382	3,314,077,496,764	4,971,116,245,147	14,243,985,869,053	4,653,035,383,891	299,690,339,923,632	69,814,089	5,817,841	330,869,095	0.21
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	1,698,464,717,092	3,396,929,434,184	5,095,394,151,275	14,984,516,996,182	4,894,942,218,753	315,130,078,559,900	73,410,839	6,117,570	339,140,822	0.22
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	1,740,926,335,019	3,481,852,670,038	5,222,779,005,057	15,756,503,927,995	5,147,124,616,478	331,223,375,826,727	77,159,838	6,429,987	347,619,343	0.22
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	1,784,449,493,395	3,568,898,986,789	5,353,348,480,184	16,561,168,791,336	5,409,981,805,170	347,995,578,717,086	81,066,991	6,755,583	356,309,826	0.23
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	1,829,060,730,729	3,658,121,461,459	5,487,182,192,188	17,399,778,935,854	5,683,927,785,712	365,472,971,169,025	85,138,421	7,094,868	365,217,572	0.23

Note:

Pension benefits paid: 2% of pensioners every year

Appendix 6b: Prediction of CSP Benefits with DC Scheme for Option 2 (IDR)

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%											
Year 0	2026	25	3,541,907	5,312,860	8,854,767	4,250,288	4,250,288	8,500,577	-	-	8,925,605	520,660	43,388	106,257,207	0.00
Year 1	2027	26	3,630,455	5,445,682	9,076,136	4,356,545	4,356,545	8,713,091	446,280	-	18,520,631	1,080,370	90,031	108,913,637	0.01
Year 2	2028	27	3,721,216	5,581,824	9,303,040	4,465,459	4,465,459	8,930,918	926,032	-	28,824,127	1,681,407	140,117	111,636,478	0.02
Year 3	2029	28	3,814,246	5,721,369	9,535,616	4,577,096	4,577,096	9,154,191	1,441,206	-	39,877,234	2,326,172	193,848	114,427,390	0.02
Year 4	2030	29	3,909,602	5,864,404	9,774,006	4,691,523	4,691,523	9,383,046	1,993,862	-	51,723,294	3,017,192	251,433	117,288,075	0.03
Year 5	2031	30	4,007,343	6,011,014	10,018,356	4,808,811	4,808,811	9,617,622	2,586,165	-	64,407,962	3,757,131	313,094	120,220,276	0.03
Year 6	2032	31	4,107,526	6,161,289	10,268,815	4,929,031	4,929,031	9,858,063	3,220,398	-	77,979,326	4,548,794	379,066	123,225,783	0.04
Year 7	2033	32	4,210,214	6,315,321	10,525,536	5,052,257	5,052,257	10,104,514	3,898,966	-	92,488,032	5,395,135	449,595	126,306,428	0.04
Year 8	2034	33	4,315,470	6,473,204	10,788,674	5,178,564	5,178,564	10,357,127	4,624,402	-	107,987,417	6,299,266	524,939	129,464,089	0.05
Year 9	2035	34	4,423,356	6,635,035	11,058,391	5,308,028	5,308,028	10,616,055	5,399,371	-	124,533,646	7,264,463	605,372	132,700,691	0.05
Year 10	2036	35	4,533,940	6,800,910	11,334,851	5,440,728	5,440,728	10,881,457	6,226,682	-	142,185,858	8,294,175	691,181	136,018,208	0.06
Year 11	2037	36	4,647,289	6,970,933	11,618,222	5,576,747	5,576,747	11,153,493	7,109,293	-	161,006,318	9,392,035	782,670	139,418,663	0.07
Year 12	2038	37	4,763,471	7,145,206	11,908,677	5,716,165	5,716,165	11,432,330	8,050,316	-	181,060,581	10,561,867	880,156	142,904,130	0.07
Year 13	2039	38	4,882,558	7,323,837	12,206,394	5,859,069	5,859,069	11,718,139	9,053,029	-	202,417,656	11,807,697	983,975	146,476,733	0.08
Year 14	2040	39	5,004,622	7,506,933	12,511,554	6,005,546	6,005,546	12,011,092	10,120,883	-	225,150,185	13,133,761	1,094,480	150,138,651	0.09
Year 15	2041	40	5,129,737	7,694,606	12,824,343	6,155,685	6,155,685	12,311,369	11,257,509	-	249,334,632	14,544,520	1,212,043	153,892,118	0.09
Year 16	2042	41	5,257,981	7,886,971	13,144,952	6,309,577	6,309,577	12,619,154	12,466,732	-	275,051,475	16,044,669	1,337,056	157,739,421	0.10
Year 17	2043	42	5,389,430	8,084,145	13,473,576	6,467,316	6,467,316	12,934,632	13,752,574	-	302,385,413	17,639,149	1,469,929	161,682,906	0.11
Year 18	2044	43	5,524,166	8,286,249	13,810,415	6,628,999	6,628,999	13,257,998	15,119,271	-	331,425,582	19,333,159	1,611,097	165,724,979	0.12
Year 19	2045	44	5,662,270	8,493,405	14,155,675	6,794,724	6,794,724	13,589,448	16,571,279	-	362,265,782	21,132,171	1,761,014	169,868,103	0.12
Year 20	2046	45	5,803,827	8,705,740	14,509,567	6,964,592	6,964,592	13,929,184	18,113,289	-	395,004,715	23,041,942	1,920,162	174,114,806	0.13
Year 21	2047	46	5,948,923	8,923,384	14,872,306	7,138,707	7,138,707	14,277,414	19,750,236	-	429,746,235	25,068,530	2,089,044	178,467,676	0.14
Year 22	2048	47	6,097,646	9,146,468	15,244,114	7,317,175	7,317,175	14,634,349	21,487,312	-	466,599,614	27,218,311	2,268,193	182,929,368	0.15
Year 23	2049	48	6,250,087	9,375,130	15,625,217	7,500,104	7,500,104	15,000,208	23,329,981	-	505,679,813	29,497,989	2,458,166	187,502,602	0.16
Year 24	2050	49	6,406,339	9,609,508	16,015,847	7,687,607	7,687,607	15,375,213	25,283,991	-	547,107,778	31,914,620	2,659,552	192,190,167	0.17
Year 25	2051	50	6,566,497	9,849,746	16,416,243	7,879,797	7,879,797	15,759,594	27,355,389	-	591,010,740	34,475,627	2,872,969	196,994,921	0.18
Year 26	2052	51	6,730,660	10,095,990	16,826,650	8,076,792	8,076,792	16,153,584	29,550,537	-	637,522,540	37,188,815	3,099,068	201,919,794	0.18
Year 27	2053	52	6,898,926	10,348,389	17,247,316	8,278,712	8,278,712	16,557,423	31,876,127	-	686,783,961	40,062,398	3,338,533	206,967,789	0.19
Year 28	2054	53	7,071,399	10,607,099	17,678,499	8,485,679	8,485,679	16,971,359	34,339,198	-	738,943,086	43,105,013	3,592,084	212,141,984	0.20
Year 29	2055	54	7,248,184	10,872,277	18,120,461	8,697,821	8,697,821	17,395,643	36,947,154	-	794,155,665	46,325,747	3,860,479	217,445,534	0.21
Year 30	2056	55	7,429,389	11,144,084	18,573,473	8,915,267	8,915,267	17,830,534	39,707,783	-	852,585,509	49,734,155	4,144,513	222,881,672	0.22
Year 31	2057	56	7,615,124	11,422,686	19,037,809	9,138,149	9,138,149	18,276,297	42,629,275	-	914,404,896	53,340,286	4,445,024	228,453,714	0.23
Year 32	2058	57	7,805,502	11,708,253	19,513,755	9,366,602	9,366,602	18,733,205	45,720,245	-	979,795,006	57,154,709	4,762,892	234,165,057	0.24
Year 33	2059	58	8,000,639	12,000,959	20,001,599	9,600,767	9,600,767	19,201,535	48,989,750	-	1,048,946,367	61,188,538	5,099,045	240,019,183	0.25
Year 34	2060	59	8,200,655	12,300,983	20,501,639	9,840,787	9,840,787	19,681,573	52,447,318	-	1,122,059,337	65,453,461	5,454,455	246,019,663	0.27
Year 35	2061	60	8,405,672	12,608,508	21,014,180	10,086,806	10,086,806	20,173,612	56,102,967	-	1,199,344,597	69,961,768	5,830,147	252,170,154	0.28
Year 36	2062	61	8,615,814	12,923,720	21,539,534	10,338,976	10,338,976	20,677,953	59,967,230	-	1,281,023,677	74,726,381	6,227,198	258,474,408	0.29
Year 37	2063	62	8,831,209	13,246,813	22,078,022	10,597,451	10,597,451	21,194,901	64,051,184	-	1,367,329,508	79,760,888	6,646,741	264,936,268	0.30
Year 38	2064	63	9,051,989	13,577,984	22,629,973	10,862,387	10,862,387	21,724,774	68,366,475	-	1,458,506,996	85,079,575	7,089,965	271,559,675	0.31
Year 39	2065	64	9,278,289	13,917,433	23,195,722	11,133,947	11,133,947	22,267,893	72,925,350	-	1,554,813,633	90,697,462	7,558,122	278,348,667	0.33
Year 40	2066	65	9,510,246	14,265,369	23,775,615	11,412,295	11,412,295	22,824,591	77,740,682	-	1,656,520,135	96,630,341	8,052,528	285,307,383	0.34
Year 41	2057	66	9,748,002	14,622,003	24,370,006	11,697,603	11,697,603	23,395,205	82,826,007	-	1,763,911,108	102,894,815	8,574,568	292,440,068	0.35
Year 42	2058	67	9,991,702	14,987,553	24,979,256	11,990,043	11,990,043	23,980,086	88,195,555	-	1,877,285,753	109,508,336	9,125,695	299,751,070	0.37
Year 43	2059	68	10,241,495	15,362,242	25,603,737	12,289,794	12,289,794	24,579,588	93,864,288	-	1,996,958,608	116,489,252	9,707,438	307,244,847	0.38
Year 44	2060	69	10,497,532	15,746,298	26,243,831	12,597,039	12,597,039	25,194,077	99,847,930	-	2,123,260,319	123,856,852	10,321,404	314,925,968	0.39
Year 45	2061	70	10,759,971	16,139,956	26,899,926	12,911,965	12,911,965	25,823,929	106,163,016	-	2,256,538,461	131,631,410	10,969,284	322,799,117	0.41
Year 46	2062	71	11,028,970	16,543,455	27,572,425	13,234,764	13,234,764	26,469,528	112,826,923	-	2,397,158,388	139,834,239	11,652,853	330,869,095	0.42
Year 47	2063	72	11,304,694	16,957,041	28,261,735	13,565,633	13,565,633	27,131,266	119,857,919	-	2,545,504,137	148,487,741	12,373,978	339,140,822	0.44
Year 48	2064	73	11,587,311	17,380,967	28,968,279	13,904,774	13,904,774	27,809,547	127,275,207	-	2,701,979,368	157,615,463	13,134,622	347,619,343	0.45
Year 49	2065	74	11,876,994	17,815,491	29,692,486	14,252,393	14,252,393	28,504,786	135,098,968	-	2,867,008,362	167,242,154	13,936,846	356,309,826	0.47
Year 50	2066	75	12,173,919	18,260,879	30,434,798	14,608,703	14,608,703	29,217,406	143,350,418	-	3,041,037,056	177,393,828	14,782,819	365,217,572	0.49

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	1,064,301,935,079	1,064,301,935,079	2,128,603,870,159	-	-	2,235,034,063,667	520,660	43,388	106,257,207	0.00
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	1,090,909,483,456	1,090,909,483,456	2,181,818,966,913	111,751,703,183	36,505,556,373	4,601,190,125,735	1,071,866	89,322	108,913,637	0.01
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	1,118,182,220,543	1,118,182,220,543	2,236,364,441,086	230,059,506,287	75,152,772,054	7,104,279,523,108	1,654,971	137,914	111,636,478	0.01
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	1,146,136,776,056	1,146,136,776,056	2,292,273,552,113	355,213,976,155	116,036,565,544	9,750,344,163,438	2,271,382	189,282	114,427,390	0.02
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	1,174,790,195,458	1,174,790,195,458	2,349,580,390,916	487,517,208,172	159,255,621,336	12,545,665,160,735	2,922,564	243,547	117,288,075	0.02
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	1,204,159,950,344	1,204,159,950,344	2,408,319,900,688	627,283,258,037	204,912,530,959	15,496,771,783,536	3,610,036	300,836	120,220,276	0.03
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	1,234,263,949,103	1,234,263,949,103	2,468,527,898,206	774,838,589,177	253,113,939,131	18,610,450,726,698	4,335,381	361,282	123,225,783	0.04
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	1,265,120,547,830	1,265,120,547,830	2,530,241,095,661	930,522,536,335	303,970,695,203	21,893,755,718,274	5,100,240	425,020	126,306,428	0.04
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	1,296,748,561,526	1,296,748,561,526	2,593,497,123,052	1,094,687,785,914	357,598,010,065	25,354,017,473,327	5,906,322	492,193	129,464,089	0.05
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	1,329,167,275,564	1,329,167,275,564	2,658,334,551,129	1,267,700,873,666	414,115,618,731	28,998,854,006,947	6,755,401	562,950	132,700,691	0.05
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	1,362,396,457,453	1,362,396,457,453	2,724,792,914,907	1,449,942,700,347	473,647,948,780	32,836,181,319,167	7,649,323	637,444	136,018,208	0.06
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	1,396,456,368,890	1,396,456,368,890	2,792,912,737,780	1,641,809,065,958	536,324,294,880	36,874,224,464,914	8,590,001	715,833	139,418,663	0.06
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	1,431,367,778,112	1,431,367,778,112	2,862,735,556,224	1,843,711,223,246	602,278,999,594	41,121,529,022,601	9,579,428	798,286	142,904,130	0.07
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	1,467,151,972,565	1,467,151,972,565	2,934,303,945,130	2,056,076,451,130	671,651,640,702	45,586,972,975,415	10,619,672	884,973	146,476,733	0.07
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	1,503,830,771,879	1,503,830,771,879	3,007,661,543,758	2,279,348,648,771	744,587,225,265	50,279,779,019,866	11,712,880	976,073	150,138,651	0.08
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	1,541,426,541,176	1,541,426,541,176	3,082,853,082,352	2,513,988,950,993	821,236,390,658	55,209,527,316,671	12,861,285	1,071,774	153,892,118	0.08
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	1,579,962,204,705	1,579,962,204,705	3,159,924,409,411	2,760,476,365,834	901,755,612,839	60,386,168,699,547	14,067,205	1,172,267	157,739,421	0.09
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	1,619,461,259,823	1,619,461,259,823	3,238,922,519,646	3,019,308,434,977	986,307,422,093	65,820,038,358,060	15,333,047	1,277,754	161,682,906	0.09
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	1,659,947,791,318	1,659,947,791,318	3,319,895,582,637	3,291,001,917,903	1,075,060,626,515	71,521,870,011,216	16,661,312	1,388,443	165,724,979	0.10
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	1,701,446,486,101	1,701,446,486,101	3,402,892,972,203	3,576,093,500,561	1,168,190,543,517	77,502,810,589,074	18,054,596	1,504,550	169,868,103	0.11
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	1,743,982,648,254	1,743,982,648,254	3,487,965,296,508	3,875,140,529,454	1,265,879,239,622	83,774,435,440,239	19,515,597	1,626,300	174,114,806	0.11
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	1,787,582,214,460	1,787,582,214,460	3,575,164,428,921	4,188,721,772,012	1,368,315,778,857	90,348,764,083,761	21,047,114	1,753,926	178,467,676	0.12
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	1,832,271,769,822	1,832,271,769,822	3,664,543,539,644	4,517,438,204,188	1,475,696,480,035	97,238,276,524,540	22,652,054	1,887,671	182,929,368	0.12
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	1,878,078,564,067	1,878,078,564,067	3,756,157,128,135	4,861,913,826,227	1,588,225,183,234	104,455,930,152,074	24,333,436	2,027,786	187,502,602	0.13
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	1,925,030,528,169	1,925,030,528,169	3,850,061,056,338	5,222,796,507,604	1,706,113,525,817	112,015,177,243,016	26,094,393	2,174,533	192,190,167	0.14
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	1,973,156,291,373	1,973,156,291,373	3,946,312,582,747	5,600,758,862,151	1,829,581,228,303	119,929,983,088,748	27,938,179	2,328,182	196,994,921	0.14
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	2,022,485,198,658	2,022,485,198,658	4,044,970,397,315	5,996,499,154,437	1,958,856,390,450	128,214,844,769,917	29,868,172	2,489,014	201,919,794	0.15
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	2,073,047,328,624	2,073,047,328,624	4,146,094,657,248	6,410,742,238,496	2,094,175,797,909	136,884,810,600,615	31,887,876	2,657,323	206,967,789	0.15
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	2,124,873,511,840	2,124,873,511,840	4,249,747,023,679	6,844,240,530,031	2,235,785,239,810	145,955,500,265,699	34,000,930	2,833,411	212,141,984	0.16
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	2,177,995,349,636	2,177,995,349,636	4,355,990,699,271	7,297,775,013,285	2,383,939,837,673	155,443,125,675,545	36,211,111	3,017,593	217,445,534	0.17
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	2,232,445,233,377	2,232,445,233,377	4,464,890,466,753	7,772,156,283,777	2,538,904,386,034	165,364,512,563,379	38,522,339	3,210,195	222,881,672	0.17
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	2,288,256,364,211	2,288,256,364,211	4,576,512,728,422	8,268,225,628,169	2,700,953,705,202	175,737,122,851,190	40,938,680	3,411,557	228,453,714	0.18
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	2,345,462,773,316	2,345,462,773,316	4,690,925,546,633	8,786,856,142,559	2,870,373,006,569	186,579,077,811,144	43,464,358	3,622,030	234,165,057	0.19
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	2,404,099,342,649	2,404,099,342,649	4,808,198,685,298	9,328,953,890,557	3,047,458,270,915	197,909,182,050,349	46,103,752	3,841,979	240,019,183	0.19
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	2,464,201,826,215	2,464,201,826,215	4,928,403,652,431	9,895,459,102,517	3,232,516,640,156	209,746,948,347,763	48,861,408	4,071,784	246,019,663	0.20
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	2,525,806,871,871	2,525,806,871,871	5,051,613,743,742	10,487,347,417,388	3,425,866,823,013	222,112,623,373,066	51,742,043	4,311,837	252,170,154	0.21
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	2,588,952,043,668	2,588,952,043,668	5,177,904,087,335	11,105,631,168,653	3,627,839,515,093	235,027,214,318,328	54,750,549	4,562,546	258,474,408	0.21
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	2,653,675,844,759	2,653,675,844,759	5,307,351,689,518	11,751,360,715,916	3,838,777,833,866	248,512,516,474,373	57,892,006	4,824,334	264,936,268	0.22
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	2,720,017,740,878	2,720,017,740,878	5,440,035,481,756	12,425,625,823,719	4,059,037,769,081	262,591,141,784,854	61,171,679	5,097,640	271,559,675	0.23
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	2,788,018,184,400	2,788,018,184,400	5,576,036,368,800	13,129,557,089,243	4,288,988,649,153	277,286,548,412,185	64,595,034	5,382,919	278,348,667	0.23
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	2,857,718,639,010	2,857,718,639,010	5,715,437,278,020	13,864,327,420,609	4,529,013,624,066	292,623,071,350,650	68,167,740	5,680,645	285,307,383	0.24
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	2,929,161,604,985	2,929,161,604,985	5,858,323,209,971	14,631,153,567,533	4,779,510,165,394	308,625,954,123,257	71,895,676	5,991,306	292,440,068	0.25
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	3,002,390,645,110	3,002,390,645,110	6,004,781,290,220	15,431,297,706,163	5,040,890,584,013	325,321,381,600,138	75,784,944	6,315,412	299,751,070	0.25
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	3,077,450,411,238	3,077,450,411,238	6,154,900,822,476	16,266,069,080,007	5,313,582,566,136	342,736,513,977,609	79,841,871	6,653,489	307,244,847	0.26
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	3,154,386,671,519	3,154,386,671,519	6,308,773,343,038	17,136,825,698,881	5,598,029,728,301	360,899,521,958,378	84,073,018	7,006,085	314,925,968	0.27
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	3,233,246,338,307	3,233,246,338,307	6,466,492,676,613	18,044,976,097,919	5,894,692,191,987	379,839,623,174,754	88,485,192	7,373,766	322,799,117	0.27
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	3,314,077,496,764	3,314,077,496,764	6,628,154,993,529	18,991,981,158,738	6,204,047,178,521	399,587,119,898,176	93,085,452	7,757,121	330,869,095	0.28
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	3,396,929,434,184	3,396,929,434,184	6,793,858,868,367	19,979,355,994,909	6,526,589,625,004	420,173,438,079,867	97,881,118	8,156,760	339,140,822	0.29
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	3,481,852,670,038	3,481,852,670,038	6,963,705,340,076	21,008,671,903,993	6,862,832,821,971	441,631,167,768,969	102,879,784	8,573,315	347,619,343	0.30
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	3,568,898,986,789	3,568,898,986,789	7,137,797,973,578	22,081,558,388,448	7,213,309,073,560	463,994,104,956,115	108,089,322	9,007,443	356,309,826	0.30
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	3,658,121,461,459	3,658,121,461,459	7,316,242,922,918	23,199,705,247,806	7,578,570,380,950	487,297,294,892,034	113,517,895	9,459,825	365,217,572	0.31

Note:

Pension benefits paid: 2% of pensioners every year

Appendix 6c: Prediction of CSP Benefits with DC Scheme for Option 3 (IDR)

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%										
Year 0	2026	25	3,541,907	5,312,860	8,854,767	2,125,144	4,250,288	6,375,432	-	6,566,695	383,057	31,921	106,257,207	0.00
Year 1	2027	26	3,630,455	5,445,682	9,076,136	2,178,273	4,356,545	6,534,818	197,001	13,494,559	787,183	65,599	108,913,637	0.01
Year 2	2028	27	3,721,216	5,581,824	9,303,040	2,232,730	4,465,459	6,698,189	404,837	20,798,530	1,213,248	101,104	111,636,478	0.01
Year 3	2029	28	3,814,246	5,721,369	9,535,616	2,288,548	4,577,096	6,865,643	623,956	28,494,099	1,662,156	138,513	114,427,390	0.01
Year 4	2030	29	3,909,602	5,864,404	9,774,006	2,345,761	4,691,523	7,037,284	854,823	36,597,325	2,134,844	177,904	117,288,075	0.02
Year 5	2031	30	4,007,343	6,011,014	10,018,356	2,404,406	4,808,811	7,213,217	1,097,920	45,124,857	2,632,283	219,357	120,220,276	0.02
Year 6	2032	31	4,107,526	6,161,289	10,268,815	2,464,516	4,929,031	7,393,547	1,353,746	54,093,957	3,155,481	262,957	123,225,783	0.03
Year 7	2033	32	4,210,214	6,315,321	10,525,536	2,526,129	5,052,257	7,578,386	1,622,819	63,522,513	3,705,480	308,790	126,306,428	0.03
Year 8	2034	33	4,315,470	6,473,204	10,788,674	2,589,282	5,178,564	7,767,845	1,905,675	73,429,069	4,283,362	356,947	129,464,089	0.03
Year 9	2035	34	4,423,356	6,635,035	11,058,391	2,654,014	5,308,028	7,962,041	2,202,872	83,832,843	4,890,249	407,521	132,700,691	0.04
Year 10	2036	35	4,533,940	6,800,910	11,334,851	2,720,364	5,440,728	8,161,092	2,514,985	94,753,754	5,527,302	460,609	136,018,208	0.04
Year 11	2037	36	4,647,289	6,970,933	11,618,222	2,788,373	5,576,747	8,365,120	2,842,613	106,212,440	6,195,726	516,310	139,418,663	0.04
Year 12	2038	37	4,763,471	7,145,206	11,908,677	2,858,083	5,716,165	8,574,248	3,186,373	118,230,288	6,896,767	574,731	142,904,130	0.05
Year 13	2039	38	4,882,558	7,323,837	12,206,394	2,929,535	5,859,069	8,788,604	3,546,909	130,829,459	7,631,718	635,977	146,476,733	0.05
Year 14	2040	39	5,004,622	7,506,933	12,511,554	3,002,773	6,005,546	9,008,319	3,924,884	144,032,912	8,401,920	700,160	150,138,651	0.06
Year 15	2041	40	5,129,737	7,694,606	12,824,343	3,077,842	6,155,685	9,233,527	4,320,987	157,864,432	9,208,759	767,397	153,892,118	0.06
Year 16	2042	41	5,257,981	7,886,971	13,144,952	3,154,788	6,309,577	9,464,365	4,735,933	172,348,661	10,053,672	837,806	157,739,421	0.06
Year 17	2043	42	5,389,430	8,084,145	13,473,576	3,233,658	6,467,316	9,700,974	5,170,460	187,511,124	10,938,149	911,512	161,682,906	0.07
Year 18	2044	43	5,524,166	8,286,249	13,810,415	3,314,500	6,628,999	9,943,499	5,625,334	203,378,262	11,863,732	988,644	165,724,979	0.07
Year 19	2045	44	5,662,270	8,493,405	14,155,675	3,397,362	6,794,724	10,192,086	6,101,348	219,977,458	12,832,018	1,069,335	169,868,103	0.08
Year 20	2046	45	5,803,827	8,705,740	14,509,567	3,482,296	6,964,592	10,446,888	6,599,324	237,337,077	13,844,663	1,153,722	174,114,806	0.08
Year 21	2047	46	5,948,923	8,923,384	14,872,306	3,569,354	7,138,707	10,708,061	7,120,112	255,486,492	14,903,379	1,241,948	178,467,676	0.08
Year 22	2048	47	6,097,646	9,146,468	15,244,114	3,658,587	7,317,175	10,975,762	7,664,595	274,456,122	16,009,940	1,334,162	182,929,368	0.09
Year 23	2049	48	6,250,087	9,375,130	15,625,217	3,750,052	7,500,104	11,250,156	8,233,684	294,277,466	17,166,186	1,430,515	187,502,602	0.09
Year 24	2050	49	6,406,339	9,609,508	16,015,847	3,843,803	7,687,607	11,531,410	8,828,324	314,983,142	18,374,017	1,531,168	192,190,167	0.10
Year 25	2051	50	6,566,497	9,849,746	16,416,243	3,939,898	7,879,797	11,819,695	9,449,494	336,606,923	19,635,404	1,636,284	196,994,921	0.10
Year 26	2052	51	6,730,660	10,095,990	16,826,650	4,038,396	8,076,792	12,115,188	10,098,208	359,183,774	20,952,387	1,746,032	201,919,794	0.10
Year 27	2053	52	6,898,926	10,348,389	17,247,316	4,139,356	8,278,712	12,418,067	10,775,513	382,749,896	22,327,077	1,860,590	206,967,789	0.11
Year 28	2054	53	7,071,399	10,607,099	17,678,499	4,242,840	8,485,679	12,728,519	11,482,497	407,342,768	23,761,661	1,980,138	212,141,984	0.11
Year 29	2055	54	7,248,184	10,872,277	18,120,461	4,348,911	8,697,821	13,046,732	12,220,283	433,001,185	25,258,402	2,104,867	217,445,534	0.12
Year 30	2056	55	7,429,389	11,144,084	18,573,473	4,457,633	8,915,267	13,372,900	12,990,036	459,765,308	26,819,643	2,234,970	222,881,672	0.12
Year 31	2057	56	7,615,124	11,422,686	19,037,809	4,569,074	9,138,149	13,707,223	13,792,959	487,676,706	28,447,808	2,370,651	228,453,714	0.12
Year 32	2058	57	7,805,502	11,708,253	19,513,755	4,683,301	9,366,602	14,049,903	14,630,301	516,778,408	30,145,407	2,512,117	234,165,057	0.13
Year 33	2059	58	8,000,639	12,000,959	20,001,599	4,800,384	9,600,767	14,401,151	15,503,352	547,114,946	31,915,039	2,659,587	240,019,183	0.13
Year 34	2060	59	8,200,655	12,300,983	20,501,639	4,920,393	9,840,787	14,761,180	16,413,448	578,732,409	33,759,391	2,813,283	246,019,663	0.14
Year 35	2061	60	8,405,672	12,608,508	21,014,180	5,043,403	10,086,806	15,130,209	17,361,972	611,678,497	35,681,246	2,973,437	252,170,154	0.14
Year 36	2062	61	8,615,814	12,923,720	21,539,534	5,169,488	10,338,976	15,508,464	18,350,355	646,002,571	37,683,483	3,140,290	258,474,408	0.15
Year 37	2063	62	8,831,209	13,246,813	22,078,022	5,298,725	10,597,451	15,896,176	19,380,077	681,755,709	39,769,083	3,314,090	264,936,268	0.15
Year 38	2064	63	9,051,989	13,577,984	22,629,973	5,431,193	10,862,387	16,293,580	20,452,671	718,990,768	41,941,128	3,495,094	271,559,675	0.15
Year 39	2065	64	9,278,289	13,917,433	23,195,722	5,566,973	11,133,947	16,700,920	21,569,723	757,762,439	44,202,809	3,683,567	278,348,667	0.16
Year 40	2066	65	9,510,246	14,265,369	23,775,615	5,706,148	11,412,295	17,118,443	22,732,873	798,127,308	46,557,426	3,879,786	285,307,383	0.16
Year 41	2057	66	9,748,002	14,622,003	24,370,006	5,848,801	11,697,603	17,546,404	23,943,819	840,143,924	49,008,396	4,084,033	292,440,068	0.17
Year 42	2058	67	9,991,702	14,987,553	24,979,256	5,995,021	11,990,043	17,985,064	25,204,318	883,872,858	51,559,250	4,296,604	299,751,070	0.17
Year 43	2059	68	10,241,495	15,362,242	25,603,737	6,144,897	12,289,794	18,434,691	26,516,186	929,376,775	54,213,645	4,517,804	307,244,847	0.18
Year 44	2060	69	10,497,532	15,746,298	26,243,831	6,298,519	12,597,039	18,895,558	27,881,303	976,720,503	56,975,363	4,747,947	314,925,968	0.18
Year 45	2061	70	10,759,971	16,139,956	26,899,926	6,455,982	12,911,965	19,367,947	29,301,615	1,025,971,104	59,848,314	4,987,360	322,799,117	0.19
Year 46	2062	71	11,028,970	16,543,455	27,572,425	6,617,382	13,234,764	19,852,146	30,779,133	1,077,197,947	62,836,547	5,236,379	330,869,095	0.19
Year 47	2063	72	11,304,694	16,957,041	28,261,735	6,782,816	13,565,633	20,348,449	32,315,938	1,130,472,788	65,944,246	5,495,354	339,140,822	0.19
Year 48	2064	73	11,587,311	17,380,967	28,968,279	6,952,387	13,904,774	20,857,161	33,914,184	1,185,869,847	69,175,741	5,764,645	347,619,343	0.20
Year 49	2065	74	11,876,994	17,815,491	29,692,486	7,126,197	14,252,393	21,378,590	35,576,095	1,243,465,890	72,535,510	6,044,626	356,309,826	0.20
Year 50	2066	75	12,173,919	18,260,879	30,434,798	7,304,351	14,608,703	21,913,054	37,303,977	1,303,340,312	76,028,185	6,335,682	365,217,572	0.21

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	532,150,967,540	1,064,301,935,079	1,596,452,902,619	-	-	1,644,346,489,698	383,057	31,921	106,257,207	0.00
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	545,454,741,728	1,090,909,483,456	1,636,364,225,185	49,330,394,691	26,857,659,332	3,352,274,376,997	780,926	65,077	108,913,637	0.01
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	559,091,110,271	1,118,182,220,543	1,677,273,330,814	100,568,231,310	54,753,814,824	5,125,680,324,221	1,194,048	99,504	111,636,478	0.01
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	573,068,388,028	1,146,136,776,056	1,719,205,164,085	153,770,409,727	83,719,445,296	6,966,512,607,659	1,622,878	135,240	114,427,390	0.01
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	587,395,097,729	1,174,790,195,458	1,762,185,293,187	208,995,378,230	113,786,372,592	8,876,772,465,280	2,067,880	172,323	117,288,075	0.02
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	602,079,975,172	1,204,159,950,344	1,806,239,925,516	266,303,173,958	144,987,283,600	10,858,515,478,920	2,529,536	210,795	120,220,276	0.02
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	617,131,974,551	1,234,263,949,103	1,851,395,923,654	325,755,464,368	177,355,752,822	12,913,852,991,829	3,008,335	250,695	123,225,783	0.02
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	632,560,273,915	1,265,120,547,830	1,897,680,821,746	387,415,589,755	210,926,265,533	15,044,953,562,449	3,504,783	292,065	126,306,428	0.03
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	648,374,280,763	1,296,748,561,526	1,945,122,842,289	451,348,606,873	245,734,241,520	17,254,044,455,360	4,019,400	334,950	129,464,089	0.03
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	664,583,637,782	1,329,167,275,564	1,993,750,913,346	517,621,333,661	281,816,059,438	19,543,413,170,331	4,552,718	379,393	132,700,691	0.03
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	681,198,228,727	1,362,396,457,453	2,043,594,686,180	586,302,395,110	319,209,081,782	21,915,409,010,424	5,105,284	425,440	136,018,208	0.04
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	698,228,184,445	1,396,456,368,890	2,094,684,553,335	657,462,270,313	357,951,680,504	24,372,444,690,168	5,677,661	473,138	139,418,663	0.04
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	715,683,889,056	1,431,367,778,112	2,147,051,667,168	731,173,340,705	398,083,263,273	26,916,997,984,783	6,270,425	522,535	142,904,130	0.04
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	733,575,986,282	1,467,151,972,565	2,200,727,958,847	807,509,939,543	439,644,300,418	29,551,613,421,521	6,884,169	573,681	146,476,733	0.05
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	751,915,385,939	1,503,830,771,879	2,255,746,157,818	886,548,402,646	482,676,352,552	32,278,904,014,168	7,519,503	626,625	150,138,651	0.05
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	770,713,270,588	1,541,426,541,176	2,312,139,811,764	968,367,120,425	527,222,098,898	35,101,553,041,812	8,177,050	681,421	153,892,118	0.05
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	789,981,102,353	1,579,962,204,705	2,369,943,307,058	1,053,046,591,254	573,325,366,350	38,022,315,872,986	8,857,454	738,121	157,739,421	0.06
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	809,730,629,911	1,619,461,259,823	2,429,191,889,734	1,140,669,476,190	621,031,159,259	41,044,021,836,343	9,561,373	796,781	161,682,906	0.06
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	829,973,895,659	1,659,947,791,318	2,489,921,686,978	1,231,320,655,090	670,385,689,994	44,169,576,139,027	10,289,483	857,457	165,724,979	0.06
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	850,723,243,051	1,701,446,486,101	2,552,169,729,152	1,325,087,284,171	721,436,410,271	47,401,961,833,954	11,042,481	920,207	169,868,103	0.07
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	871,991,324,127	1,743,982,648,254	2,615,973,972,381	1,422,058,855,019	774,232,043,288	50,744,241,837,237	11,821,078	985,090	174,114,806	0.07
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	893,791,107,230	1,787,582,214,460	2,681,373,321,691	1,522,327,255,117	828,822,616,675	54,199,560,997,020	12,626,009	1,052,167	178,467,676	0.07
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	916,135,884,911	1,832,271,769,822	2,748,407,654,733	1,625,986,829,911	885,259,496,285	57,771,148,215,021	13,458,025	1,121,502	182,929,368	0.07
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	939,039,282,034	1,878,078,564,067	2,817,117,846,101	1,733,134,446,451	943,595,420,845	61,462,318,622,111	14,317,898	1,193,158	187,502,602	0.08
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	962,515,264,085	1,925,030,528,169	2,887,545,792,254	1,843,869,558,663	1,003,884,537,494	65,276,475,809,301	15,206,422	1,267,202	192,190,167	0.08
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	986,578,145,687	1,973,156,291,373	2,959,734,437,060	1,958,294,274,279	1,066,182,438,219	69,217,114,115,533	16,124,409	1,343,701	196,994,921	0.08
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	1,011,242,599,329	2,022,485,198,658	3,033,727,797,986	2,076,513,423,466	1,130,546,197,220	73,287,820,973,705	17,072,697	1,422,725	201,919,794	0.08
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	1,036,523,664,312	2,073,047,328,624	3,109,570,992,936	2,198,634,629,211	1,197,034,409,237	77,492,279,316,403	18,052,143	1,504,345	206,967,789	0.09
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	1,062,436,755,920	2,124,873,511,840	3,187,310,267,760	2,324,768,379,492	1,265,707,228,835	81,834,270,042,852	19,063,627	1,588,636	212,141,984	0.09
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	1,088,997,674,818	2,177,995,349,636	3,266,993,024,454	2,455,028,101,286	1,336,626,410,700	86,317,674,548,625	20,108,055	1,675,671	217,445,534	0.09
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	1,116,222,616,688	2,232,445,233,377	3,348,667,850,065	2,589,530,236,459	1,409,855,350,961	90,946,477,319,690	21,186,353	1,765,529	222,881,672	0.10
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	1,144,128,182,105	2,288,256,364,211	3,432,384,546,316	2,728,394,319,591	1,485,459,129,555	95,724,768,592,432	22,299,476	1,858,290	228,453,714	0.10
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	1,172,731,386,658	2,345,462,773,316	3,518,194,159,974	2,871,743,057,773	1,563,504,553,676	100,656,747,081,302	23,448,400	1,954,033	234,165,057	0.10
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	1,202,049,671,325	2,404,099,342,649	3,606,149,013,974	3,019,702,412,439	1,644,060,202,328	105,746,722,775,806	24,634,131	2,052,844	240,019,183	0.10
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	1,232,100,913,108	2,464,201,826,215	3,696,302,739,323	3,172,401,683,274	1,727,196,472,005	110,999,119,808,578	25,857,698	2,154,808	246,019,663	0.11
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	1,262,903,435,935	2,525,806,871,871	3,788,710,307,806	3,329,973,594,257	1,812,985,623,540	116,418,479,396,336	27,120,160	2,260,013	252,170,154	0.11
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	1,294,476,021,834	2,588,952,043,668	3,883,428,065,501	3,492,554,381,890	1,901,501,830,140	122,009,462,855,552	28,422,603	2,368,550	258,474,408	0.11
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	1,326,837,922,380	2,653,675,844,759	3,980,513,767,139	3,660,283,885,667	1,992,821,226,641	127,776,854,694,731	29,766,140	2,480,512	264,936,268	0.11
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	1,360,008,870,439	2,720,017,740,878	4,080,026,611,317	3,833,305,640,842	2,087,021,960,014	133,725,565,785,215	31,151,917	2,595,993	271,559,675	0.11
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	1,394,009,092,200	2,788,018,184,400	4,182,027,276,600	4,011,766,973,556	2,184,184,241,159	139,860,636,612,512	32,581,107	2,715,092	278,348,667	0.12
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	1,428,859,319,505	2,857,718,639,010	4,286,577,958,515	4,195,819,098,375	2,284,390,398,004	146,187,240,610,153	34,054,915	2,837,910	285,307,383	0.12
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	1,464,580,802,493	2,929,161,604,985	4,393,742,407,478	4,385,617,218,305	2,387,724,929,966	152,710,687,578,195	35,574,578	2,964,548	292,440,068	0.12
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	1,501,195,322,555	3,002,390,645,110	4,503,585,967,665	4,581,320,627,346	2,494,274,563,777	159,436,427,188,458	37,141,367	3,095,114	299,751,070	0.12
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	1,538,725,205,619	3,077,450,411,238	4,616,175,616,857	4,783,092,815,654	2,604,128,310,745	166,370,052,578,730	38,756,583	3,229,715	307,244,847	0.13
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	1,577,193,335,759	3,154,386,671,519	4,731,580,007,278	4,991,101,577,362	2,717,377,525,453	173,517,304,038,135	40,421,565	3,368,464	314,925,968	0.13
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	1,616,623,169,153	3,233,246,338,307	4,849,869,507,460	5,205,519,121,144	2,834,115,965,956	180,884,072,786,007	42,137,684	3,511,474	322,799,117	0.13
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	1,657,038,748,382	3,314,077,496,764	4,971,116,245,147	5,426,522,183,580	2,954,439,855,505	188,476,404,846,584	43,906,348	3,658,862	330,869,095	0.13
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	1,698,464,717,092	3,396,929,434,184	5,095,394,151,275	5,654,292,145,398	3,078,447,945,828	196,300,505,021,967	45,729,004	3,810,750	339,140,822	0.13
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	1,740,926,335,019	3,481,852,670,038	5,222,779,005,057	5,889,015,150,659	3,206,241,582,025	204,362,740,965,810	47,607,135	3,967,261	347,619,343	0.14
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	1,784,449,493,395	3,568,898,986,789	5,353,348,480,184	6,130,882,228,974	3,337,924,769,108	212,669,647,360,265	49,542,263	4,128,522	356,309,826	0.14
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	1,829,060,730,729	3,658,121,461,459	5,487,182,192,188	6,380,089,420,808	3,473,604,240,218	221,227,930,198,809	51,535,950	4,294,662	365,217,572	0.14

Note:
Pension benefits paid: 2% of pensioners every year

Appendix 6d: Prediction of CSP Benefits with DC Scheme for Option 4 (IDR)

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%										
Year 0	2026	25	3,541,907	5,312,860	8,854,767	4,250,288	4,250,288	8,500,577	-	8,755,594	510,743	42,562	106,257,207	0.00
Year 1	2027	26	3,630,455	5,445,682	9,076,136	4,356,545	4,356,545	8,713,091	262,668	17,992,745	1,049,577	87,465	108,913,637	0.01
Year 2	2028	27	3,721,216	5,581,824	9,303,040	4,465,459	4,465,459	8,930,918	539,782	27,731,373	1,617,663	134,805	111,636,478	0.01
Year 3	2029	28	3,814,246	5,721,369	9,535,616	4,577,096	4,577,096	9,154,191	831,941	37,992,132	2,216,208	184,684	114,427,390	0.02
Year 4	2030	29	3,909,602	5,864,404	9,774,006	4,691,523	4,691,523	9,383,046	1,139,764	48,796,433	2,846,459	237,205	117,288,075	0.02
Year 5	2031	30	4,007,343	6,011,014	10,018,356	4,808,811	4,808,811	9,617,622	1,463,893	60,166,477	3,509,711	292,476	120,220,276	0.03
Year 6	2032	31	4,107,526	6,161,289	10,268,815	4,929,031	4,929,031	9,858,063	1,804,994	72,125,276	4,207,308	350,609	123,225,783	0.03
Year 7	2033	32	4,210,214	6,315,321	10,525,536	5,052,257	5,052,257	10,104,514	2,163,758	84,696,683	4,940,640	411,720	126,306,428	0.04
Year 8	2034	33	4,315,470	6,473,204	10,788,674	5,178,564	5,178,564	10,357,127	2,540,901	97,905,425	5,711,150	475,929	129,464,089	0.04
Year 9	2035	34	4,423,356	6,635,035	11,058,391	5,308,028	5,308,028	10,616,055	2,937,163	111,777,125	6,520,332	543,361	132,700,691	0.05
Year 10	2036	35	4,533,940	6,800,910	11,334,851	5,440,728	5,440,728	10,881,457	3,353,314	126,338,339	7,369,736	614,145	136,018,208	0.05
Year 11	2037	36	4,647,289	6,970,933	11,618,222	5,576,747	5,576,747	11,153,493	3,790,150	141,616,587	8,260,968	688,414	139,418,663	0.06
Year 12	2038	37	4,763,471	7,145,206	11,908,677	5,716,165	5,716,165	11,432,330	4,248,498	157,640,384	9,195,689	766,307	142,904,130	0.06
Year 13	2039	38	4,882,558	7,323,837	12,206,394	5,859,069	5,859,069	11,718,139	4,729,212	174,439,279	10,175,625	847,969	146,476,733	0.07
Year 14	2040	39	5,004,622	7,506,933	12,511,554	6,005,546	6,005,546	12,011,092	5,233,178	192,043,882	11,202,560	933,547	150,138,651	0.07
Year 15	2041	40	5,129,737	7,694,606	12,824,343	6,155,685	6,155,685	12,311,369	5,761,316	210,485,909	12,278,345	1,023,195	153,892,118	0.08
Year 16	2042	41	5,257,981	7,886,971	13,144,952	6,309,577	6,309,577	12,619,154	6,314,577	229,798,215	13,404,896	1,117,075	157,739,421	0.08
Year 17	2043	42	5,389,430	8,084,145	13,473,576	6,467,316	6,467,316	12,934,632	6,893,946	250,014,833	14,584,199	1,215,350	161,682,906	0.09
Year 18	2044	43	5,524,166	8,286,249	13,810,415	6,628,999	6,628,999	13,257,998	7,500,445	271,171,016	15,818,309	1,318,192	165,724,979	0.10
Year 19	2045	44	5,662,270	8,493,405	14,155,675	6,794,724	6,794,724	13,589,448	8,135,130	293,303,278	17,109,358	1,425,780	169,868,103	0.10
Year 20	2046	45	5,803,827	8,705,740	14,509,567	6,964,592	6,964,592	13,929,184	8,799,098	316,449,436	18,459,550	1,538,296	174,114,806	0.11
Year 21	2047	46	5,948,923	8,923,384	14,872,306	7,138,707	7,138,707	14,277,414	9,493,483	340,648,656	19,871,172	1,655,931	178,467,676	0.11
Year 22	2048	47	6,097,646	9,146,468	15,244,114	7,317,175	7,317,175	14,634,349	10,219,460	365,941,495	21,346,587	1,778,882	182,929,368	0.12
Year 23	2049	48	6,250,087	9,375,130	15,625,217	7,500,104	7,500,104	15,000,208	10,978,245	392,369,955	22,888,247	1,907,354	187,502,602	0.12
Year 24	2050	49	6,406,339	9,609,508	16,015,847	7,687,607	7,687,607	15,375,213	11,771,099	419,977,523	24,498,689	2,041,557	192,190,167	0.13
Year 25	2051	50	6,566,497	9,849,746	16,416,243	7,879,797	7,879,797	15,759,594	12,599,326	448,809,230	26,180,538	2,181,712	196,994,921	0.13
Year 26	2052	51	6,730,660	10,095,990	16,826,650	8,076,792	8,076,792	16,153,584	13,464,277	478,911,698	27,936,516	2,328,043	201,919,794	0.14
Year 27	2053	52	6,898,926	10,348,389	17,247,316	8,278,712	8,278,712	16,557,423	14,367,351	510,333,195	29,769,436	2,480,786	206,967,789	0.14
Year 28	2054	53	7,071,399	10,607,099	17,678,499	8,485,679	8,485,679	16,971,359	15,309,996	543,123,690	31,682,215	2,640,185	212,141,984	0.15
Year 29	2055	54	7,248,184	10,872,277	18,120,461	8,697,821	8,697,821	17,395,643	16,293,711	577,334,913	33,677,870	2,806,489	217,445,534	0.15
Year 30	2056	55	7,429,389	11,144,084	18,573,473	8,915,267	8,915,267	17,830,534	17,320,047	613,020,410	35,759,524	2,979,960	222,881,672	0.16
Year 31	2057	56	7,615,124	11,422,686	19,037,809	9,138,149	9,138,149	18,276,297	18,390,612	650,235,609	37,930,411	3,160,868	228,453,714	0.17
Year 32	2058	57	7,805,502	11,708,253	19,513,755	9,366,602	9,366,602	18,733,205	19,507,068	689,037,878	40,193,876	3,349,490	234,165,057	0.17
Year 33	2059	58	8,000,639	12,000,959	20,001,599	9,600,767	9,600,767	19,201,535	20,671,136	729,486,595	42,553,385	3,546,115	240,019,183	0.18
Year 34	2060	59	8,200,655	12,300,983	20,501,639	9,840,787	9,840,787	19,681,573	21,884,598	771,643,213	45,012,521	3,751,043	246,019,663	0.18
Year 35	2061	60	8,405,672	12,608,508	21,014,180	10,086,806	10,086,806	20,173,612	23,149,296	815,571,330	47,574,994	3,964,583	252,170,154	0.19
Year 36	2062	61	8,615,814	12,923,720	21,539,534	10,338,976	10,338,976	20,677,953	24,467,140	861,336,761	50,244,644	4,187,054	258,474,408	0.19
Year 37	2063	62	8,831,209	13,246,813	22,078,022	10,597,451	10,597,451	21,194,901	25,840,103	909,007,612	53,025,444	4,418,787	264,936,268	0.20
Year 38	2064	63	9,051,989	13,577,984	22,629,973	10,862,387	10,862,387	21,724,774	27,270,228	958,654,358	55,921,504	4,660,125	271,559,675	0.21
Year 39	2065	64	9,278,289	13,917,433	23,195,722	11,133,947	11,133,947	22,267,893	28,759,631	1,010,349,919	58,937,079	4,911,423	278,348,667	0.21
Year 40	2066	65	9,510,246	14,265,369	23,775,615	11,412,295	11,412,295	22,824,591	30,310,498	1,064,169,745	62,076,568	5,173,047	285,307,383	0.22
Year 41	2057	66	9,748,002	14,622,003	24,370,006	11,697,603	11,697,603	23,395,205	31,925,092	1,120,191,899	65,344,527	5,445,377	292,440,068	0.22
Year 42	2058	67	9,991,702	14,987,553	24,979,256	11,990,043	11,990,043	23,980,086	33,605,757	1,178,497,144	68,745,667	5,728,806	299,751,070	0.23
Year 43	2059	68	10,241,495	15,362,242	25,603,737	12,289,794	12,289,794	24,579,588	35,354,914	1,239,169,033	72,284,860	6,023,738	307,244,847	0.24
Year 44	2060	69	10,497,532	15,746,298	26,243,831	12,597,039	12,597,039	25,194,077	37,175,071	1,302,294,004	75,967,150	6,330,596	314,925,968	0.24
Year 45	2061	70	10,759,971	16,139,956	26,899,926	12,911,965	12,911,965	25,823,929	39,068,820	1,367,961,471	79,797,752	6,649,813	322,799,117	0.25
Year 46	2062	71	11,028,970	16,543,455	27,572,425	13,234,764	13,234,764	26,469,528	41,038,844	1,436,263,929	83,782,063	6,981,839	330,869,095	0.25
Year 47	2063	72	11,304,694	16,957,041	28,261,735	13,565,633	13,565,633	27,131,266	43,087,918	1,507,297,051	87,925,661	7,327,138	339,140,822	0.26
Year 48	2064	73	11,587,311	17,380,967	28,968,279	13,904,774	13,904,774	27,809,547	45,218,912	1,581,159,796	92,234,321	7,686,193	347,619,343	0.27
Year 49	2065	74	11,876,994	17,815,491	29,692,486	14,252,393	14,252,393	28,504,786	47,434,794	1,657,954,519	96,714,014	8,059,501	356,309,826	0.27
Year 50	2066	75	12,173,919	18,260,879	30,434,798	14,608,703	14,608,703	29,217,406	49,738,636	1,737,787,083	101,370,913	8,447,576	365,217,572	0.28

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	1,064,301,935,079	1,064,301,935,079	2,128,603,870,159	-	-	2,192,461,986,264	510,743	42,562	106,257,207	0.00
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	1,090,909,483,456	1,090,909,483,456	2,181,818,966,913	65,773,859,588	35,810,212,442	4,469,699,169,329	1,041,235	86,770	108,913,637	0.01
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	1,118,182,220,543	1,118,182,220,543	2,236,364,441,086	134,090,975,080	73,005,086,432	6,834,240,432,295	1,592,064	132,672	111,636,478	0.01
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	1,146,136,776,056	1,146,136,776,056	2,292,273,552,113	205,027,212,969	111,625,927,061	9,288,683,476,879	2,163,837	180,320	114,427,390	0.02
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	1,174,790,195,458	1,174,790,195,458	2,349,580,390,916	278,660,504,306	151,715,163,456	11,835,696,620,373	2,757,174	229,764	117,288,075	0.02
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	1,204,159,950,344	1,204,159,950,344	2,408,319,900,688	355,070,898,611	193,316,378,133	14,478,020,638,560	3,372,714	281,060	120,220,276	0.03
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	1,234,263,949,103	1,234,263,949,103	2,468,527,898,206	434,340,619,157	236,474,337,096	17,218,470,655,773	4,011,113	334,259	123,225,783	0.03
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	1,265,120,547,830	1,265,120,547,830	2,530,241,095,661	516,554,119,673	281,235,020,711	20,059,938,083,265	4,673,045	389,420	126,306,428	0.04
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	1,296,748,561,526	1,296,748,561,526	2,593,497,123,052	601,798,142,498	327,645,655,360	23,005,392,607,147	5,359,200	446,600	129,464,089	0.04
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	1,329,167,275,564	1,329,167,275,564	2,658,334,551,129	690,161,778,214	375,754,745,917	26,057,884,227,107	6,070,291	505,858	132,700,691	0.05
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	1,362,396,457,453	1,362,396,457,453	2,724,792,914,907	781,736,526,813	425,612,109,043	29,220,545,347,232	6,807,045	567,254	136,018,208	0.05
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	1,396,456,368,890	1,396,456,368,890	2,792,912,737,780	876,616,360,417	477,268,907,338	32,496,592,920,224	7,570,214	630,851	139,418,663	0.05
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	1,431,367,778,112	1,431,367,778,112	2,862,735,556,224	974,897,787,607	530,777,684,364	35,889,330,646,377	8,360,566	696,714	142,904,130	0.06
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	1,467,151,972,565	1,467,151,972,565	2,934,303,945,130	1,076,679,919,391	586,192,400,557	39,402,151,228,695	9,178,892	764,908	146,476,733	0.06
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	1,503,830,771,879	1,503,830,771,879	3,007,661,543,758	1,182,064,536,861	643,568,470,069	43,038,538,685,557	10,026,003	835,500	150,138,651	0.07
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	1,541,426,541,176	1,541,426,541,176	3,082,853,082,352	1,291,156,160,567	702,962,798,531	46,802,070,722,416	10,902,734	908,561	153,892,118	0.07
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	1,579,962,204,705	1,579,962,204,705	3,159,924,409,411	1,404,062,121,672	764,433,821,799	50,696,421,163,982	11,809,938	984,162	157,739,421	0.07
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	1,619,461,259,823	1,619,461,259,823	3,238,922,519,646	1,520,892,634,919	828,041,545,678	54,725,362,448,458	12,748,497	1,062,375	161,682,906	0.08
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	1,659,947,791,318	1,659,947,791,318	3,319,895,582,637	1,641,760,873,454	893,847,586,658	58,892,768,185,369	13,719,311	1,143,276	165,724,979	0.08
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	1,701,446,486,101	1,701,446,486,101	3,402,892,972,203	1,766,783,045,561	961,915,213,694	63,202,615,778,605	14,723,307	1,226,942	169,868,103	0.09
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	1,743,982,648,254	1,743,982,648,254	3,487,965,296,508	1,896,078,473,358	1,032,309,391,051	67,658,989,116,316	15,761,438	1,313,453	174,114,806	0.09
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	1,787,582,214,460	1,787,582,214,460	3,575,164,428,921	2,029,769,673,489	1,105,096,822,233	72,266,081,329,361	16,834,679	1,402,890	178,467,676	0.09
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	1,832,271,769,822	1,832,271,769,822	3,664,543,539,644	2,167,982,439,881	1,180,345,995,046	77,028,197,620,028	17,944,033	1,495,336	182,929,368	0.10
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	1,878,078,564,067	1,878,078,564,067	3,756,157,128,135	2,310,845,928,601	1,258,127,227,794	81,949,758,162,814	19,090,531	1,590,878	187,502,602	0.10
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	1,925,030,528,169	1,925,030,528,169	3,850,061,056,338	2,458,492,744,884	1,338,512,716,659	87,035,301,079,068	20,275,229	1,689,602	192,190,167	0.11
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	1,973,156,291,373	1,973,156,291,373	3,946,312,582,747	2,611,059,032,372	1,421,576,584,291	92,289,485,487,377	21,499,213	1,791,601	196,994,921	0.11
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	2,022,485,198,658	2,022,485,198,658	4,044,970,397,315	2,768,684,564,621	1,507,394,929,627	97,717,094,631,606	22,763,596	1,896,966	201,919,794	0.11
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	2,073,047,328,624	2,073,047,328,624	4,146,094,657,248	2,931,512,838,948	1,596,045,878,983	103,323,039,088,537	24,069,524	2,005,794	206,967,789	0.12
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	2,124,873,511,840	2,124,873,511,840	4,249,747,023,679	3,099,691,172,656	1,687,609,638,446	109,112,360,057,137	25,418,170	2,118,181	212,141,984	0.12
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	2,177,995,349,636	2,177,995,349,636	4,355,990,699,271	3,273,370,801,714	1,782,168,547,600	115,090,232,731,500	26,810,740	2,234,228	217,445,534	0.12
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	2,232,445,233,377	2,232,445,233,377	4,464,890,466,753	3,452,706,981,945	1,879,807,134,615	121,261,969,759,586	28,248,471	2,354,039	222,881,672	0.13
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	2,288,256,364,211	2,288,256,364,211	4,576,512,728,422	3,637,859,092,788	1,980,612,172,740	127,633,024,789,909	29,732,634	2,477,720	228,453,714	0.13
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	2,345,462,773,316	2,345,462,773,316	4,690,925,546,633	3,828,990,743,697	2,084,672,738,235	134,208,996,108,402	31,264,534	2,605,378	234,165,057	0.13
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	2,404,099,342,649	2,404,099,342,649	4,808,198,685,298	4,026,269,883,252	2,192,080,269,771	140,995,630,367,741	32,845,508	2,737,126	240,019,183	0.14
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	2,464,201,826,215	2,464,201,826,215	4,928,403,652,431	4,229,868,911,032	2,302,928,629,340	147,998,826,411,437	34,476,931	2,873,078	246,019,663	0.14
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	2,525,806,871,871	2,525,806,871,871	5,051,613,743,742	4,439,964,792,343	2,417,314,164,720	155,224,639,195,114	36,160,214	3,013,351	252,170,154	0.14
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	2,588,952,043,668	2,588,952,043,668	5,177,904,087,335	4,656,739,175,853	2,535,335,773,520	162,679,283,807,402	37,896,804	3,158,067	258,474,408	0.15
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	2,653,675,844,759	2,653,675,844,759	5,307,351,689,518	4,880,378,514,222	2,657,094,968,854	170,369,139,592,974	39,688,187	3,307,349	264,936,268	0.15
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	2,720,017,740,878	2,720,017,740,878	5,440,035,481,756	5,111,074,187,789	2,782,695,946,685	178,300,754,380,287	41,535,889	3,461,324	271,559,675	0.15
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	2,788,018,184,400	2,788,018,184,400	5,576,036,368,800	5,349,022,631,409	2,912,245,654,878	186,480,848,816,682	43,441,475	3,620,123	278,348,667	0.16
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	2,857,718,639,010	2,857,718,639,010	5,715,437,278,020	5,594,425,464,500	3,045,853,864,006	194,916,320,813,538	45,406,553	3,783,879	285,307,383	0.16
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	2,929,161,604,985	2,929,161,604,985	5,858,323,209,971	5,847,489,624,406	3,183,633,239,954	203,614,250,104,260	47,432,771	3,952,731	292,440,068	0.16
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	3,002,390,645,110	3,002,390,645,110	6,004,781,290,220	6,108,427,503,128	3,325,699,418,370	212,581,902,917,945	49,521,822	4,126,819	299,751,070	0.17
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	3,077,450,411,238	3,077,450,411,238	6,154,900,822,476	6,377,457,087,538	3,472,171,080,993	221,826,736,771,640	51,675,444	4,306,287	307,244,847	0.17
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	3,154,386,671,519	3,154,386,671,519	6,308,773,343,038	6,654,802,103,149	3,623,170,033,937	231,356,405,384,181	53,895,420	4,491,285	314,925,968	0.17
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	3,233,246,338,307	3,233,246,338,307	6,466,492,676,613	6,940,692,161,525	3,778,821,287,942	241,178,763,714,676	56,183,578	4,681,965	322,799,117	0.17
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	3,314,077,496,764	3,314,077,496,764	6,628,154,993,529	7,235,362,911,440	3,939,253,140,673	251,301,873,128,778	58,541,798	4,878,483	330,869,095	0.18
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	3,396,929,434,184	3,396,929,434,184	6,793,858,868,367	7,539,056,193,863	4,104,597,261,103	261,734,006,695,956	60,972,006	5,081,000	339,140,822	0.18
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	3,481,852,670,038	3,481,852,670,038	6,963,705,340,076	7,852,020,200,879	4,274,988,776,034	272,483,654,621,079	63,476,180	5,289,682	347,619,343	0.18
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	3,568,898,986,789	3,568,898,986,789	7,137,797,973,578	8,174,509,638,632	4,450,566,358,811	283,559,529,813,686	66,056,351	5,504,696	356,309,826	0.19
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	3,658,121,461,459	3,658,121,461,459	7,316,242,922,918	8,506,785,894,411	4,631,472,320,290	294,970,573,598,412	68,714,600	5,726,217	365,217,572	0.19

Note:
Pension benefits paid: 2% of pensioners every year

Appendix 6e: Government Budget Prediction of CSP Benefits with DC Scheme for Option 1 – Option 4 (IDR)

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution
				40%	60%			
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	1,064,301,935,079	1,064,301,935,079
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	1,090,909,483,456	1,090,909,483,456
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	1,118,182,220,543	1,118,182,220,543
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	1,146,136,776,056	1,146,136,776,056
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	1,174,790,195,458	1,174,790,195,458
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	1,204,159,950,344	1,204,159,950,344
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	1,234,263,949,103	1,234,263,949,103
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	1,265,120,547,830	1,265,120,547,830
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	1,296,748,561,526	1,296,748,561,526
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	1,329,167,275,564	1,329,167,275,564
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	1,362,396,457,453	1,362,396,457,453
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	1,396,456,368,890	1,396,456,368,890
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	1,431,367,778,112	1,431,367,778,112
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	1,467,151,972,565	1,467,151,972,565
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	1,503,830,771,879	1,503,830,771,879
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	1,541,426,541,176	1,541,426,541,176
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	1,579,962,204,705	1,579,962,204,705
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	1,619,461,259,823	1,619,461,259,823
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	1,659,947,791,318	1,659,947,791,318
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	1,701,446,486,101	1,701,446,486,101
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	1,743,982,648,254	1,743,982,648,254
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	1,787,582,214,460	1,787,582,214,460
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	1,832,271,769,822	1,832,271,769,822
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	1,878,078,564,067	1,878,078,564,067
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	1,925,030,528,169	1,925,030,528,169
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	1,973,156,291,373	1,973,156,291,373
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	2,022,485,198,658	2,022,485,198,658
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	2,073,047,328,624	2,073,047,328,624
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	2,124,873,511,840	2,124,873,511,840
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	2,177,995,349,636	2,177,995,349,636
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	2,232,445,233,377	2,232,445,233,377
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	2,288,256,364,211	2,288,256,364,211
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	2,345,462,773,316	2,345,462,773,316
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	2,404,099,342,649	2,404,099,342,649
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	2,464,201,826,215	2,464,201,826,215
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	2,525,806,871,871	2,525,806,871,871
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	2,588,952,043,668	2,588,952,043,668
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	2,653,675,844,759	2,653,675,844,759
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	2,720,017,740,878	2,720,017,740,878
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	2,788,018,184,400	2,788,018,184,400
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	2,857,718,639,010	2,857,718,639,010
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	2,929,161,604,985	2,929,161,604,985
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	3,002,390,645,110	3,002,390,645,110
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	3,077,450,411,238	3,077,450,411,238
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	3,154,386,671,519	3,154,386,671,519
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	3,233,246,338,307	3,233,246,338,307
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	3,314,077,496,764	3,314,077,496,764
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	3,396,929,434,184	3,396,929,434,184
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	3,481,852,670,038	3,481,852,670,038
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	3,568,898,986,789	3,568,898,986,789
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	3,658,121,461,459	3,658,121,461,459

Appendix 6f: Prediction of CSP Benefits with DC Scheme (IDR) for Option 5

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%										
Year 0	2026	25	3,541,907	5,312,860	8,854,767	5,312,860	10,625,721	15,938,581	-	16,735,510	976,238	81,353	106,257,207	0.01
Year 1	2027	26	3,630,455	5,445,682	9,076,136	5,445,682	10,891,364	16,337,046	836,776	34,726,183	2,025,694	168,808	108,913,637	0.02
Year 2	2028	27	3,721,216	5,581,824	9,303,040	5,581,824	11,163,648	16,745,472	1,736,309	54,045,238	3,152,639	262,720	111,636,478	0.03
Year 3	2029	28	3,814,246	5,721,369	9,535,616	5,721,369	11,442,739	17,164,108	2,702,262	74,769,814	4,361,572	363,464	114,427,390	0.04
Year 4	2030	29	3,909,602	5,864,404	9,774,006	5,864,404	11,728,807	17,593,211	3,738,491	96,981,176	5,657,235	471,436	117,288,075	0.05
Year 5	2031	30	4,007,343	6,011,014	10,018,356	6,011,014	12,022,028	18,033,041	4,849,059	120,764,928	7,044,621	587,052	120,220,276	0.06
Year 6	2032	31	4,107,526	6,161,289	10,268,815	6,161,289	12,322,578	18,483,868	6,038,246	146,211,236	8,528,989	710,749	123,225,783	0.07
Year 7	2033	32	4,210,214	6,315,321	10,525,536	6,315,321	12,630,643	18,945,964	7,310,562	173,415,060	10,115,878	842,990	126,306,428	0.08
Year 8	2034	33	4,315,470	6,473,204	10,788,674	6,473,204	12,946,409	19,419,613	8,670,753	202,476,407	11,811,124	984,260	129,464,089	0.09
Year 9	2035	34	4,423,356	6,635,035	11,058,391	6,635,035	13,270,069	19,905,104	10,123,820	233,500,586	13,620,868	1,135,072	132,700,691	0.10
Year 10	2036	35	4,533,940	6,800,910	11,334,851	6,800,910	13,601,821	20,402,731	11,675,029	266,598,483	15,551,578	1,295,965	136,018,208	0.11
Year 11	2037	36	4,647,289	6,970,933	11,618,222	6,970,933	13,941,866	20,912,799	13,329,924	301,886,847	17,610,066	1,467,506	139,418,663	0.13
Year 12	2038	37	4,763,471	7,145,206	11,908,677	7,145,206	14,290,413	21,435,619	15,094,342	339,488,589	19,803,501	1,650,292	142,904,130	0.14
Year 13	2039	38	4,882,558	7,323,837	12,206,394	7,323,837	14,647,673	21,971,510	16,974,429	379,533,104	22,139,431	1,844,953	146,476,733	0.15
Year 14	2040	39	5,004,622	7,506,933	12,511,554	7,506,933	15,013,865	22,520,798	18,976,655	422,156,597	24,625,802	2,052,150	150,138,651	0.16
Year 15	2041	40	5,129,737	7,694,606	12,824,343	7,694,606	15,389,212	23,083,818	21,107,830	467,502,436	27,270,975	2,272,581	153,892,118	0.18
Year 16	2042	41	5,257,981	7,886,971	13,144,952	7,886,971	15,773,942	23,660,913	23,375,122	515,721,516	30,083,755	2,506,980	157,739,421	0.19
Year 17	2043	42	5,389,430	8,084,145	13,473,576	8,084,145	16,168,291	24,252,436	25,786,076	566,972,650	33,073,405	2,756,117	161,682,906	0.20
Year 18	2044	43	5,524,166	8,286,249	13,810,415	8,286,249	16,572,498	24,858,747	28,348,632	621,422,966	36,249,673	3,020,806	165,724,979	0.22
Year 19	2045	44	5,662,270	8,493,405	14,155,675	8,493,405	16,986,810	25,480,216	31,071,148	679,248,341	39,622,820	3,301,902	169,868,103	0.23
Year 20	2046	45	5,803,827	8,705,740	14,509,567	8,705,740	17,411,481	26,117,221	33,962,417	740,633,840	43,203,641	3,600,303	174,114,806	0.25
Year 21	2047	46	5,948,923	8,923,384	14,872,306	8,923,384	17,846,768	26,770,151	37,031,692	805,774,191	47,003,494	3,916,958	178,467,676	0.26
Year 22	2048	47	6,097,646	9,146,468	15,244,114	9,146,468	18,292,937	27,439,405	40,288,710	874,874,276	51,034,333	4,252,861	182,929,368	0.28
Year 23	2049	48	6,250,087	9,375,130	15,625,217	9,375,130	18,750,260	28,125,390	43,743,714	948,149,650	55,308,730	4,609,061	187,502,602	0.29
Year 24	2050	49	6,406,339	9,609,508	16,015,847	9,609,508	19,219,017	28,828,525	47,407,482	1,025,827,083	59,839,913	4,986,659	192,190,167	0.31
Year 25	2051	50	6,566,497	9,849,746	16,416,243	9,849,746	19,699,492	29,549,238	51,291,354	1,108,145,138	64,641,800	5,386,817	196,994,921	0.33
Year 26	2052	51	6,730,660	10,095,990	16,826,650	10,095,990	20,191,979	30,287,969	55,407,257	1,195,354,762	69,729,028	5,810,752	201,919,794	0.35
Year 27	2053	52	6,898,926	10,348,389	17,247,316	10,348,389	20,696,779	31,045,168	59,767,738	1,287,719,927	75,116,996	6,259,750	206,967,789	0.36
Year 28	2054	53	7,071,399	10,607,099	17,678,499	10,607,099	21,214,198	31,821,298	64,385,996	1,385,518,286	80,821,900	6,735,158	212,141,984	0.38
Year 29	2055	54	7,248,184	10,872,277	18,120,461	10,872,277	21,744,553	32,616,830	69,275,914	1,489,041,872	86,860,776	7,238,398	217,445,534	0.40
Year 30	2056	55	7,429,389	11,144,084	18,573,473	11,144,084	22,288,167	33,432,251	74,452,094	1,598,597,829	93,251,540	7,770,962	222,881,672	0.42
Year 31	2057	56	7,615,124	11,422,686	19,037,809	11,422,686	22,845,371	34,268,057	79,929,891	1,714,509,180	100,013,035	8,334,420	228,453,714	0.44
Year 32	2058	57	7,805,502	11,708,253	19,513,755	11,708,253	23,416,506	35,124,758	85,725,459	1,837,115,635	107,165,079	8,930,423	234,165,057	0.46
Year 33	2059	58	8,000,639	12,000,959	20,001,599	12,000,959	24,001,918	36,002,877	91,855,782	1,966,774,438	114,728,509	9,560,709	240,019,183	0.48
Year 34	2060	59	8,200,655	12,300,983	20,501,639	12,300,983	24,601,966	36,902,949	98,338,722	2,103,861,257	122,725,240	10,227,103	246,019,663	0.50
Year 35	2061	60	8,405,672	12,608,508	21,014,180	12,608,508	25,217,015	37,825,523	105,193,063	2,248,771,119	131,178,315	10,931,526	252,170,154	0.52
Year 36	2062	61	8,615,814	12,923,720	21,539,534	12,923,720	25,847,441	38,771,161	112,438,556	2,401,919,395	140,111,965	11,675,997	258,474,408	0.54
Year 37	2063	62	8,831,209	13,246,813	22,078,022	13,246,813	26,493,627	39,740,440	120,095,970	2,563,742,827	149,551,665	12,462,639	264,936,268	0.56
Year 38	2064	63	9,051,989	13,577,984	22,629,973	13,577,984	27,155,967	40,733,951	128,187,141	2,734,700,617	159,524,203	13,293,684	271,559,675	0.59
Year 39	2065	64	9,278,289	13,917,433	23,195,722	13,917,433	27,834,867	41,752,300	136,735,031	2,915,275,563	170,057,741	14,171,478	278,348,667	0.61
Year 40	2066	65	9,510,246	14,265,369	23,775,615	14,265,369	28,530,738	42,796,108	145,763,778	3,105,975,254	181,181,890	15,098,491	285,307,383	0.64
Year 41	2067	66	9,748,002	14,622,003	24,370,006	14,622,003	29,244,007	43,866,010	155,298,763	3,307,333,327	192,927,777	16,077,315	292,440,068	0.66
Year 42	2068	67	9,991,702	14,987,553	24,979,256	14,987,553	29,975,107	44,962,660	165,366,666	3,519,910,787	205,328,129	17,110,677	299,751,070	0.68
Year 43	2069	68	10,241,495	15,362,242	25,603,737	15,362,242	30,724,485	46,086,727	175,995,539	3,744,297,390	218,417,348	18,201,446	307,244,847	0.71
Year 44	2070	69	10,497,532	15,746,298	26,243,831	15,746,298	31,492,597	47,238,895	187,214,869	3,981,113,099	232,231,597	19,352,633	314,925,968	0.74
Year 45	2071	70	10,759,971	16,139,956	26,899,926	16,139,956	32,279,912	48,419,868	199,055,655	4,231,009,615	246,808,894	20,567,408	322,799,117	0.76
Year 46	2072	71	11,028,970	16,543,455	27,572,425	16,543,455	33,086,909	49,630,364	211,550,481	4,494,671,978	262,189,199	21,849,100	330,869,095	0.79
Year 47	2073	72	11,304,694	16,957,041	28,261,735	16,957,041	33,914,082	50,871,123	224,733,599	4,772,820,256	278,414,515	23,201,210	339,140,822	0.82
Year 48	2074	73	11,587,311	17,380,967	28,968,279	17,380,967	34,761,934	52,142,901	238,641,013	5,066,211,316	295,528,993	24,627,416	347,619,343	0.85
Year 49	2075	74	11,876,994	17,815,491	29,692,486	17,815,491	35,630,983	53,446,474	253,310,566	5,375,640,679	313,579,040	26,131,587	356,309,826	0.88
Year 50	2076	75	12,173,919	18,260,879	30,434,798	18,260,879	36,521,757	54,782,636	268,782,034	5,701,944,481	332,613,428	27,717,786	365,217,572	0.91

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	1,330,377,418,849	2,660,754,837,699	3,991,132,256,548	-	-	4,190,688,869,375	976,238	81,353	106,257,207	0.01
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	1,363,636,854,320	2,727,273,708,641	4,090,910,562,961	209,534,443,469	68,447,918,200	8,627,231,485,754	2,009,749	167,479	108,913,637	0.02
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	1,397,727,775,678	2,795,455,551,357	4,193,183,327,035	431,361,574,288	140,911,447,601	13,320,524,105,828	3,103,070	258,589	111,636,478	0.03
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	1,432,670,970,070	2,865,341,940,141	4,298,012,910,211	666,026,205,291	217,568,560,395	18,281,895,306,446	4,258,842	354,904	114,427,390	0.04
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	1,468,487,744,322	2,936,975,488,644	4,405,463,232,967	914,094,765,322	298,604,290,005	23,523,122,176,378	5,479,807	456,651	117,288,075	0.05
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	1,505,199,937,930	3,010,399,875,861	4,515,599,813,791	1,176,156,108,819	384,210,995,548	29,056,447,094,130	6,768,818	564,068	120,220,276	0.06
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	1,542,829,936,379	3,085,659,872,757	4,628,489,809,136	1,452,822,354,706	474,588,635,871	34,894,595,112,558	8,128,838	677,403	123,225,783	0.07
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	1,581,400,684,788	3,162,801,369,576	4,744,202,054,364	1,744,729,755,628	569,945,053,505	41,050,791,971,763	9,562,950	796,912	126,306,428	0.08
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	1,620,935,701,908	3,241,871,403,815	4,862,807,105,723	2,052,539,598,588	670,496,268,872	47,538,782,762,488	11,074,354	922,863	129,464,089	0.09
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	1,661,459,094,455	3,322,918,188,911	4,984,377,283,366	2,376,939,138,124	776,466,785,121	54,372,851,263,026	12,666,378	1,055,531	132,700,691	0.10
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	1,702,995,571,817	3,405,991,143,634	5,108,986,715,450	2,718,642,563,151	888,089,903,963	61,567,839,973,438	14,342,480	1,195,207	136,018,208	0.11
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	1,745,570,461,112	3,491,140,922,224	5,236,711,383,337	3,078,391,998,672	1,005,608,052,899	69,139,170,871,714	16,106,252	1,342,188	139,418,663	0.12
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	1,789,209,722,640	3,578,419,445,280	5,367,629,167,920	3,456,958,543,586	1,129,273,124,238	77,102,866,917,377	17,961,428	1,496,786	142,904,130	0.13
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	1,833,939,965,706	3,667,879,931,412	5,501,819,897,118	3,855,143,345,869	1,259,346,826,317	85,475,574,328,903	19,911,884	1,659,324	146,476,733	0.14
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	1,879,788,464,849	3,759,576,929,697	5,639,365,394,546	4,273,778,716,445	1,396,101,047,372	94,274,585,662,249	21,961,650	1,830,137	150,138,651	0.15
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	1,926,783,176,470	3,853,566,352,940	5,780,349,529,410	4,713,729,283,112	1,539,818,232,483	103,517,863,718,758	24,114,909	2,009,576	153,892,118	0.16
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	1,974,952,755,882	3,949,905,511,763	5,924,858,267,645	5,175,893,185,938	1,690,791,774,073	113,224,066,311,650	26,376,009	2,198,001	157,739,421	0.17
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	2,024,326,574,779	4,048,653,149,557	6,072,979,724,336	5,661,203,315,583	1,849,326,416,424	123,412,571,921,362	28,749,463	2,395,789	161,682,906	0.18
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	2,074,934,739,148	4,149,869,478,296	6,224,804,217,444	6,170,628,596,068	2,015,738,674,716	134,103,506,271,031	31,239,959	2,603,330	165,724,979	0.19
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	2,126,808,107,627	4,253,616,215,254	6,380,424,322,880	6,705,175,313,552	2,190,357,269,094	145,317,769,854,513	33,852,368	2,821,031	169,868,103	0.20
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	2,179,978,310,317	4,359,956,620,635	6,539,934,930,952	7,265,888,492,726	2,373,523,574,290	157,077,066,450,448	36,591,744	3,049,312	174,114,806	0.21
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	2,234,477,768,075	4,468,955,536,151	6,703,433,304,226	7,853,853,322,522	2,565,592,085,357	169,403,932,657,051	39,463,338	3,288,611	178,467,676	0.22
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	2,290,339,712,277	4,580,679,424,555	6,871,019,136,832	8,470,196,632,853	2,766,930,900,065	182,321,768,483,512	42,472,601	3,539,383	182,929,368	0.23
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	2,347,598,205,084	4,695,196,410,168	7,042,794,615,253	9,116,088,424,176	2,977,922,218,564	195,854,869,035,139	45,625,192	3,802,099	187,502,602	0.24
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	2,406,288,160,211	4,812,576,320,423	7,218,864,480,634	9,792,743,451,757	3,198,962,860,907	210,028,457,330,654	48,926,987	4,077,249	192,190,167	0.25
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	2,466,445,364,217	4,932,890,728,433	7,399,336,092,650	10,501,422,866,533	3,430,464,803,067	224,868,718,291,402	52,384,086	4,365,341	196,994,921	0.27
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	2,528,106,498,322	5,056,212,996,644	7,584,319,494,966	11,243,435,914,570	3,672,855,732,093	240,402,833,943,594	56,002,822	4,666,902	201,919,794	0.28
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	2,591,309,160,780	5,182,618,321,560	7,773,927,482,340	12,020,141,697,180	3,926,579,621,079	256,659,019,876,152	59,789,767	4,982,481	206,967,789	0.29
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	2,656,091,889,800	5,312,183,779,599	7,968,275,669,399	12,832,950,993,808	4,192,097,324,644	273,666,562,998,185	63,751,744	5,312,645	212,141,984	0.30
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	2,722,494,187,045	5,444,988,374,089	8,167,482,561,134	13,683,328,149,909	4,469,887,195,637	291,455,860,641,647	67,895,833	5,657,986	217,445,534	0.31
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	2,790,556,541,721	5,581,113,083,441	8,371,669,625,162	14,572,793,032,082	4,760,445,723,814	310,058,461,056,336	72,229,385	6,019,115	222,881,672	0.32
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	2,860,320,455,264	5,720,640,910,527	8,580,961,365,791	15,502,923,052,817	5,064,288,197,254	329,507,105,345,980	76,760,026	6,396,669	228,453,714	0.34
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	2,931,828,466,645	5,863,656,933,291	8,795,485,399,936	16,475,355,267,299	5,381,949,387,318	349,835,770,895,895	81,495,672	6,791,306	234,165,057	0.35
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	3,005,124,178,311	6,010,248,356,623	9,015,372,534,934	17,491,788,544,795	5,713,984,257,966	371,079,716,344,404	86,444,535	7,203,711	240,019,183	0.36
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	3,080,252,282,769	6,160,504,565,538	9,240,756,848,308	18,553,985,817,220	6,060,968,700,292	393,275,528,152,055	91,615,140	7,634,595	246,019,663	0.37
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	3,157,258,589,838	6,314,517,179,677	9,471,775,769,515	19,663,776,407,603	6,423,500,293,150	416,461,168,824,499	97,016,330	8,084,694	252,170,154	0.38
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	3,236,190,054,584	6,472,380,109,169	9,708,570,163,753	20,823,058,441,225	6,802,199,090,800	440,676,026,846,865	102,657,280	8,554,773	258,474,408	0.40
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	3,317,094,805,949	6,634,189,611,898	9,951,284,417,847	22,033,801,342,343	7,197,708,438,499	465,960,968,389,449	108,547,511	9,045,626	264,936,268	0.41
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	3,400,022,176,098	6,800,044,352,196	10,200,066,528,293	23,298,048,419,472	7,610,695,817,028	492,358,390,846,601	114,696,898	9,558,075	271,559,675	0.42
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	3,485,022,730,500	6,970,045,461,000	10,455,068,191,501	24,617,919,542,330	8,041,853,717,161	519,912,278,272,846	121,115,689	10,092,974	278,348,667	0.44
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	3,572,148,298,763	7,144,296,597,525	10,716,444,896,288	25,995,613,913,642	8,491,900,545,123	548,668,258,782,468	127,814,512	10,651,209	285,307,383	0.45
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	3,661,452,006,232	7,322,904,012,464	10,984,356,018,695	27,433,412,939,123	8,961,581,560,114	578,673,663,981,108	134,804,393	11,233,699	292,440,068	0.46
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	3,752,988,306,388	7,505,976,612,775	11,258,964,919,163	28,933,683,199,055	9,451,669,845,025	609,977,590,500,259	142,096,771	11,841,398	299,751,070	0.47
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	3,846,813,014,047	7,693,626,028,095	11,540,439,042,142	30,498,879,525,013	9,962,967,311,504	642,630,963,708,017	149,703,508	12,475,292	307,244,847	0.49
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	3,942,983,339,398	7,885,966,678,797	11,828,950,018,195	32,131,548,185,401	10,496,305,740,564	676,686,603,671,958	157,636,908	13,136,409	314,925,968	0.50
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	4,041,557,922,883	8,083,115,845,767	12,124,673,768,650	33,834,330,183,598	11,052,547,859,975	712,199,293,452,664	165,909,734	13,825,811	322,799,117	0.51
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	4,142,596,870,955	8,285,193,741,911	12,427,790,612,867	35,609,964,672,633	11,632,588,459,727	749,225,849,809,080	174,535,222	14,544,602	330,869,095	0.53
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	4,246,161,792,729	8,492,323,585,459	12,738,485,378,188	37,461,292,490,454	12,237,355,546,882	787,825,196,399,750	183,527,097	15,293,925	339,140,822	0.54
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	4,352,315,837,548	8,704,631,675,095	13,056,947,512,643	39,391,259,819,988	12,867,811,541,196	828,058,439,566,817	192,899,595	16,074,966	347,619,343	0.55
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	4,461,123,733,486	8,922,247,466,973	13,383,371,200,459	41,402,921,978,341	13,524,954,512,925	869,988,946,792,715	202,667,478	16,888,957	356,309,826	0.57
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	4,572,651,826,823	9,145,303,653,647	13,717,955,480,470	43,499,447,339,636	14,209,819,464,281	913,682,427,922,563	212,846,053	17,737,171	365,217,572	0.58

Note:

Pension benefits paid: 2% of pensioners every year

Appendix 6g: Prediction of CSP Benefits with DC Scheme (IDR) for Option 6

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%										
Year 0	2026	25	3,541,907	5,312,860	8,854,767	10,625,721	10,625,721	21,251,441	-	22,314,013	1,301,651	108,471	106,257,207	0.01
Year 1	2027	26	3,630,455	5,445,682	9,076,136	10,891,364	10,891,364	21,782,727	1,115,701	46,301,578	2,700,925	225,077	108,913,637	0.02
Year 2	2028	27	3,721,216	5,581,824	9,303,040	11,163,648	11,163,648	22,327,296	2,315,079	72,060,317	4,203,518	350,293	111,636,478	0.04
Year 3	2029	28	3,814,246	5,721,369	9,535,616	11,442,739	11,442,739	22,885,478	3,603,016	99,693,085	5,815,430	484,619	114,427,390	0.05
Year 4	2030	29	3,909,602	5,864,404	9,774,006	11,728,807	11,728,807	23,457,615	4,984,654	129,308,235	7,542,980	628,582	117,288,075	0.06
Year 5	2031	30	4,007,343	6,011,014	10,018,356	12,022,028	12,022,028	24,044,055	6,465,412	161,019,904	9,392,828	782,736	120,220,276	0.08
Year 6	2032	31	4,107,526	6,161,289	10,268,815	12,322,578	12,322,578	24,645,157	8,050,995	194,948,314	11,371,985	947,665	123,225,783	0.09
Year 7	2033	32	4,210,214	6,315,321	10,525,536	12,630,643	12,630,643	25,261,286	9,747,416	231,220,080	13,487,838	1,123,986	126,306,428	0.11
Year 8	2034	33	4,315,470	6,473,204	10,788,674	12,946,409	12,946,409	25,892,818	11,561,004	269,968,542	15,748,165	1,312,347	129,464,089	0.12
Year 9	2035	34	4,423,356	6,635,035	11,058,391	13,270,069	13,270,069	26,540,138	13,498,427	311,334,115	18,161,157	1,513,430	132,700,691	0.14
Year 10	2036	35	4,533,940	6,800,910	11,334,851	13,601,821	13,601,821	27,203,642	15,566,706	355,464,644	20,735,438	1,727,953	136,018,208	0.15
Year 11	2037	36	4,647,289	6,970,933	11,618,222	13,941,866	13,941,866	27,883,733	17,773,232	402,515,796	23,480,088	1,956,674	139,418,663	0.17
Year 12	2038	37	4,763,471	7,145,206	11,908,677	14,290,413	14,290,413	28,580,826	20,125,790	452,651,453	26,404,668	2,200,389	142,904,130	0.18
Year 13	2039	38	4,882,558	7,323,837	12,206,394	14,647,673	14,647,673	29,295,347	22,632,573	506,044,139	29,519,241	2,459,937	146,476,733	0.20
Year 14	2040	39	5,004,622	7,506,933	12,511,554	15,013,865	15,013,865	30,027,730	25,302,207	562,875,463	32,834,402	2,736,200	150,138,651	0.22
Year 15	2041	40	5,129,737	7,694,606	12,824,343	15,389,212	15,389,212	30,778,424	28,143,773	623,336,581	36,361,301	3,030,108	153,892,118	0.24
Year 16	2042	41	5,257,981	7,886,971	13,144,952	15,773,942	15,773,942	31,547,884	31,166,829	687,628,688	40,111,673	3,342,639	157,739,421	0.25
Year 17	2043	42	5,389,430	8,084,145	13,473,576	16,168,291	16,168,291	32,336,581	34,381,434	755,963,533	44,097,873	3,674,823	161,682,906	0.27
Year 18	2044	43	5,524,166	8,286,249	13,810,415	16,572,498	16,572,498	33,144,996	37,798,177	828,563,955	48,332,897	4,027,741	165,724,979	0.29
Year 19	2045	44	5,662,270	8,493,405	14,155,675	16,986,810	16,986,810	33,973,621	41,428,198	905,664,455	52,830,427	4,402,536	169,868,103	0.31
Year 20	2046	45	5,803,827	8,705,740	14,509,567	17,411,481	17,411,481	34,822,961	45,283,223	987,511,787	57,604,854	4,800,405	174,114,806	0.33
Year 21	2047	46	5,948,923	8,923,384	14,872,306	17,846,768	17,846,768	35,693,535	49,375,589	1,074,365,588	62,671,326	5,222,610	178,467,676	0.35
Year 22	2048	47	6,097,646	9,146,468	15,244,114	18,292,937	18,292,937	36,585,874	53,718,279	1,166,499,034	68,045,777	5,670,481	182,929,368	0.37
Year 23	2049	48	6,250,087	9,375,130	15,625,217	18,750,260	18,750,260	37,500,520	58,324,952	1,264,199,533	73,744,973	6,145,414	187,502,602	0.39
Year 24	2050	49	6,406,339	9,609,508	16,015,847	19,219,017	19,219,017	38,438,033	63,209,977	1,367,769,444	79,786,551	6,648,879	192,190,167	0.42
Year 25	2051	50	6,566,497	9,849,746	16,416,243	19,699,492	19,699,492	39,398,984	68,388,472	1,477,526,850	86,189,066	7,182,422	196,994,921	0.44
Year 26	2052	51	6,730,660	10,095,990	16,826,650	20,191,979	20,191,979	40,383,959	73,876,343	1,593,806,349	92,972,037	7,747,670	201,919,794	0.46
Year 27	2053	52	6,898,926	10,348,389	17,247,316	20,696,779	20,696,779	41,393,558	79,690,317	1,716,959,903	100,155,994	8,346,333	206,967,789	0.48
Year 28	2054	53	7,071,399	10,607,099	17,678,499	21,214,198	21,214,198	42,428,397	85,847,995	1,847,357,714	107,762,533	8,980,211	212,141,984	0.51
Year 29	2055	54	7,248,184	10,872,277	18,120,461	21,744,553	21,744,553	43,489,107	92,367,886	1,985,389,162	115,814,368	9,651,197	217,445,534	0.53
Year 30	2056	55	7,429,389	11,144,084	18,573,473	22,288,167	22,288,167	44,576,334	99,269,458	2,131,463,772	124,335,387	10,361,282	222,881,672	0.56
Year 31	2057	56	7,615,124	11,422,686	19,037,809	22,845,371	22,845,371	45,690,743	106,573,189	2,286,012,240	133,350,714	11,112,559	228,453,714	0.58
Year 32	2058	57	7,805,502	11,708,253	19,513,755	23,416,506	23,416,506	46,833,011	114,300,612	2,449,487,514	142,886,772	11,907,231	234,165,057	0.61
Year 33	2059	58	8,000,639	12,000,959	20,001,599	24,001,918	24,001,918	48,003,837	122,474,376	2,622,365,918	152,971,345	12,747,612	240,019,183	0.64
Year 34	2060	59	8,200,655	12,300,983	20,501,639	24,601,966	24,601,966	49,203,933	131,118,296	2,805,148,343	163,633,653	13,636,138	246,019,663	0.67
Year 35	2061	60	8,405,672	12,608,508	21,014,180	25,217,015	25,217,015	50,434,031	140,257,417	2,998,361,493	174,904,420	14,575,368	252,170,154	0.69
Year 36	2062	61	8,615,814	12,923,720	21,539,534	25,847,441	25,847,441	51,694,882	149,918,075	3,202,559,193	186,815,953	15,567,996	258,474,408	0.72
Year 37	2063	62	8,831,209	13,246,813	22,078,022	26,493,627	26,493,627	52,987,254	160,127,960	3,418,323,769	199,402,220	16,616,852	264,936,268	0.75
Year 38	2064	63	9,051,989	13,577,984	22,629,973	27,155,967	27,155,967	54,311,935	170,916,188	3,646,267,489	212,698,937	17,724,911	271,559,675	0.78
Year 39	2065	64	9,278,289	13,917,433	23,195,722	27,834,867	27,834,867	55,669,733	182,313,374	3,887,034,084	226,743,655	18,895,305	278,348,667	0.81
Year 40	2066	65	9,510,246	14,265,369	23,775,615	28,530,738	28,530,738	57,061,477	194,351,704	4,141,300,338	241,575,853	20,131,321	285,307,383	0.85
Year 41	2067	66	9,748,002	14,622,003	24,370,006	29,244,007	29,244,007	58,488,014	207,065,017	4,409,777,769	257,237,037	21,436,420	292,440,068	0.88
Year 42	2068	67	9,991,702	14,987,553	24,979,256	29,975,107	29,975,107	59,950,214	220,488,888	4,693,214,383	273,770,839	22,814,237	299,751,070	0.91
Year 43	2069	68	10,241,495	15,362,242	25,603,737	30,724,485	30,724,485	61,448,969	234,660,719	4,992,396,519	291,223,130	24,268,594	307,244,847	0.95
Year 44	2070	69	10,497,532	15,746,298	26,243,831	31,492,597	31,492,597	62,985,194	249,619,826	5,308,150,799	309,642,130	25,803,511	314,925,968	0.98
Year 45	2071	70	10,759,971	16,139,956	26,899,926	32,279,912	32,279,912	64,559,823	265,407,540	5,641,346,153	329,078,526	27,423,210	322,799,117	1.02
Year 46	2072	71	11,028,970	16,543,455	27,572,425	33,086,909	33,086,909	66,173,819	282,067,308	5,992,895,971	349,585,598	29,132,133	330,869,095	1.06
Year 47	2073	72	11,304,694	16,957,041	28,261,735	33,914,082	33,914,082	67,828,164	299,644,799	6,363,760,342	371,219,353	30,934,946	339,140,822	1.09
Year 48	2074	73	11,587,311	17,380,967	28,968,279	34,761,934	34,761,934	69,523,869	318,188,017	6,754,948,421	394,038,658	32,836,555	347,619,343	1.13
Year 49	2075	74	11,876,994	17,815,491	29,692,486	35,630,983	35,630,983	71,261,965	337,747,421	7,167,520,905	418,105,386	34,842,116	356,309,826	1.17
Year 50	2076	75	12,173,919	18,260,879	30,434,798	36,521,757	36,521,757	73,043,514	358,376,045	7,602,592,641	443,484,571	36,957,048	365,217,572	1.21

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	2,660,754,837,699	2,660,754,837,699	5,321,509,675,397	-	-	5,587,585,159,167	1,301,651	108,471	106,257,207	0.01
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	2,727,273,708,641	2,727,273,708,641	5,454,547,417,282	279,379,257,958	91,263,890,933	11,502,975,314,338	2,679,665	223,305	108,913,637	0.02
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	2,795,455,551,357	2,795,455,551,357	5,590,911,102,714	575,148,765,717	187,881,930,134	17,760,698,807,771	4,137,427	344,786	111,636,478	0.04
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	2,865,341,940,141	2,865,341,940,141	5,730,683,880,282	888,034,940,389	290,091,413,860	24,375,860,408,595	5,678,456	473,205	114,427,390	0.05
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	2,936,975,488,644	2,936,975,488,644	5,873,950,977,289	1,218,793,020,430	398,139,053,340	31,364,162,901,837	7,306,410	608,867	117,288,075	0.06
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	3,010,399,875,861	3,010,399,875,861	6,020,799,751,721	1,568,208,145,092	512,281,327,397	38,741,929,458,840	9,025,091	752,091	120,220,276	0.08
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	3,085,659,872,757	3,085,659,872,757	6,171,319,745,514	1,937,096,472,942	632,784,847,828	46,526,126,816,744	10,838,451	903,204	123,225,783	0.09
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	3,162,801,369,576	3,162,801,369,576	6,325,602,739,152	2,326,306,340,837	759,926,738,007	54,734,389,295,684	12,750,600	1,062,550	126,306,428	0.10
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	3,241,871,403,815	3,241,871,403,815	6,483,742,807,631	2,736,719,464,784	893,995,025,163	63,385,043,683,317	14,765,805	1,230,484	129,464,089	0.11
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	3,322,918,188,911	3,322,918,188,911	6,645,836,377,822	3,169,252,184,166	1,035,289,046,828	72,497,135,017,368	16,888,504	1,407,375	132,700,691	0.13
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	3,405,991,143,634	3,405,991,143,634	6,811,982,287,267	3,624,856,750,868	1,184,119,871,950	82,090,453,297,917	19,123,306	1,593,609	136,018,208	0.14
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	3,491,140,922,224	3,491,140,922,224	6,982,281,844,449	4,104,522,664,896	1,340,810,737,199	92,185,561,162,285	21,475,003	1,789,584	139,418,663	0.15
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	3,578,419,445,280	3,578,419,445,280	7,156,838,890,560	4,609,278,058,114	1,505,697,498,984	102,803,822,556,503	23,948,570	1,995,714	142,904,130	0.17
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	3,667,879,931,412	3,667,879,931,412	7,335,759,862,824	5,140,191,127,825	1,679,129,101,756	113,967,432,438,537	26,549,179	2,212,432	146,476,733	0.18
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	3,759,576,929,697	3,759,576,929,697	7,519,153,859,395	5,698,371,621,927	1,861,468,063,163	125,699,447,549,665	29,282,200	2,440,183	150,138,651	0.20
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	3,853,566,352,940	3,853,566,352,940	7,707,132,705,879	6,284,972,377,483	2,053,090,976,645	138,023,818,291,677	32,153,212	2,679,434	153,892,118	0.21
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	3,949,905,511,763	3,949,905,511,763	7,899,811,023,526	6,901,190,914,584	2,254,389,032,097	150,965,421,748,867	35,168,012	2,930,668	157,739,421	0.22
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	4,048,653,149,557	4,048,653,149,557	8,097,306,299,115	7,548,271,087,443	2,465,768,555,231	164,550,095,895,149	38,332,617	3,194,385	161,682,906	0.24
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	4,149,869,478,296	4,149,869,478,296	8,299,738,956,592	8,227,504,794,757	2,687,651,566,287	178,804,675,028,041	41,653,279	3,471,107	165,724,979	0.25
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	4,253,616,215,254	4,253,616,215,254	8,507,232,430,507	8,940,233,751,402	2,920,476,358,791	193,757,026,472,684	45,136,491	3,761,374	169,868,103	0.27
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	4,359,956,620,635	4,359,956,620,635	8,719,913,241,270	9,687,851,323,634	3,164,698,099,054	209,436,088,600,598	48,788,992	4,065,749	174,114,806	0.28
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	4,468,955,536,151	4,468,955,536,151	8,937,911,072,302	10,471,804,430,030	3,420,789,447,143	225,871,910,209,402	52,617,784	4,384,815	178,467,676	0.29
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	4,580,679,424,555	4,580,679,424,555	9,161,358,849,109	11,293,595,510,470	3,689,241,200,087	243,095,691,311,349	56,630,134	4,719,178	182,929,368	0.31
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	4,695,196,410,168	4,695,196,410,168	9,390,392,820,337	12,154,784,565,568	3,970,562,958,085	261,139,825,380,185	60,833,589	5,069,466	187,502,602	0.32
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	4,812,576,320,423	4,812,576,320,423	9,625,152,640,845	13,056,991,269,009	4,265,283,814,543	280,037,943,107,539	65,235,983	5,436,332	192,190,167	0.34
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	4,932,890,728,433	4,932,890,728,433	9,865,781,456,867	14,001,897,155,377	4,573,953,070,756	299,824,957,721,870	69,845,448	5,820,454	196,994,921	0.35
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	5,056,212,996,644	5,056,212,996,644	10,112,425,993,288	14,991,247,886,094	4,897,140,976,124	320,537,111,924,792	74,670,429	6,222,536	201,919,794	0.37
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	5,182,618,321,560	5,182,618,321,560	10,365,236,643,120	16,026,855,596,240	5,235,439,494,772	342,212,026,501,536	79,719,689	6,643,307	206,967,789	0.39
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	5,312,183,779,599	5,312,183,779,599	10,624,367,559,198	17,110,601,325,077	5,589,463,099,525	364,888,750,664,246	85,002,325	7,083,527	212,141,984	0.40
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	5,444,988,374,089	5,444,988,374,089	10,889,976,748,178	18,244,437,533,212	5,959,849,594,183	388,607,814,188,863	90,527,777	7,543,981	217,445,534	0.42
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	5,581,113,083,441	5,581,113,083,441	11,162,226,166,883	19,430,390,709,443	6,347,260,965,085	413,411,281,408,448	96,305,846	8,025,487	222,881,672	0.43
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	5,720,640,910,527	5,720,640,910,527	11,441,281,821,055	20,670,564,070,422	6,752,384,263,005	439,342,807,127,974	102,346,701	8,528,892	228,453,714	0.45
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	5,863,656,933,291	5,863,656,933,291	11,727,313,866,581	21,967,140,356,399	7,175,932,516,424	466,447,694,527,859	108,660,895	9,055,075	234,165,057	0.46
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	6,010,248,356,623	6,010,248,356,623	12,020,496,713,246	23,322,384,726,393	7,618,645,677,288	494,772,955,125,872	115,259,381	9,604,948	240,019,183	0.48
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	6,160,504,565,538	6,160,504,565,538	12,321,009,131,077	24,738,647,756,294	8,081,291,600,389	524,367,370,869,407	122,153,521	10,179,460	246,019,663	0.50
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	6,314,517,179,677	6,314,517,179,677	12,629,034,359,354	26,218,368,543,470	8,564,667,057,534	555,281,558,432,665	129,355,107	10,779,592	252,170,154	0.51
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	6,472,380,109,169	6,472,380,109,169	12,944,760,218,338	27,764,077,921,633	9,069,598,787,734	587,568,035,795,820	136,876,374	11,406,364	258,474,408	0.53
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	6,634,189,611,898	6,634,189,611,898	13,268,379,223,796	29,378,401,789,791	9,596,944,584,665	621,281,291,185,932	144,730,014	12,060,835	264,936,268	0.55
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	6,800,044,352,196	6,800,044,352,196	13,600,088,704,391	31,064,064,559,297	10,147,594,422,704	656,477,854,462,135	152,929,197	12,744,100	271,559,675	0.56
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	6,970,045,461,000	6,970,045,461,000	13,940,090,922,001	32,823,892,723,107	10,722,471,622,882	693,216,371,030,462	161,487,585	13,457,299	278,348,667	0.58
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	7,144,296,597,525	7,144,296,597,525	14,288,593,195,051	34,660,818,551,523	11,322,534,060,164	731,557,678,376,624	170,419,349	14,201,612	285,307,383	0.60
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	7,322,904,012,464	7,322,904,012,464	14,645,808,024,927	36,577,883,918,831	11,948,775,413,485	771,564,885,308,144	179,739,191	14,978,266	292,440,068	0.61
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	7,505,976,612,775	7,505,976,612,775	15,011,953,225,550	38,578,244,265,407	12,602,226,460,033	813,303,454,000,346	189,462,361	15,788,530	299,751,070	0.63
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	7,693,626,028,095	7,693,626,028,095	15,387,252,056,189	40,665,172,700,017	13,283,956,415,339	856,841,284,944,022	199,604,677	16,633,723	307,244,847	0.65
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	7,885,966,678,797	7,885,966,678,797	15,771,933,357,594	42,842,064,247,201	13,995,074,320,752	902,248,804,895,945	210,182,544	17,515,212	314,925,968	0.67
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	8,083,115,845,767	8,083,115,845,767	16,166,231,691,534	45,112,440,244,797	14,736,730,479,967	949,599,057,936,885	221,212,979	18,434,415	322,799,117	0.69
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	8,285,193,741,911	8,285,193,741,911	16,570,387,483,822	47,479,952,896,844	15,510,117,946,303	998,967,799,745,440	232,713,629	19,392,802	330,869,095	0.70
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	8,492,323,585,459	8,492,323,585,459	16,984,647,170,918	49,948,389,987,272	16,316,474,062,509	1,050,433,595,199,670	244,702,796	20,391,900	339,140,822	0.72
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	8,704,631,675,095	8,704,631,675,095	17,409,263,350,190	52,521,679,759,983	17,157,082,054,928	1,104,077,919,422,420	257,199,460	21,433,288	347,619,343	0.74
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	8,922,247,466,973	8,922,247,466,973	17,844,494,933,945	55,203,895,971,121	18,033,272,683,900	1,159,985,262,390,290	270,223,304	22,518,609	356,309,826	0.76
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	9,145,303,653,647	9,145,303,653,647	18,290,607,307,294	57,999,263,119,514	18,946,425,952,375	1,218,243,237,230,080	283,794,738	23,649,561	365,217,572	0.78

Note:

Pension benefits paid: 2% of pensioners every year

Appendix 6h: Prediction of CSP Benefits with DC Scheme (IDR) for Option 7

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%										
Year 0	2026	25	3,541,907	5,312,860	8,854,767	5,312,860	10,625,721	15,938,581	-	16,416,738	957,643	79,804	106,257,207	0.01
Year 1	2027	26	3,630,455	5,445,682	9,076,136	5,445,682	10,891,364	16,337,046	492,502	33,736,398	1,967,957	163,996	108,913,637	0.02
Year 2	2028	27	3,721,216	5,581,824	9,303,040	5,581,824	11,163,648	16,745,472	1,012,092	51,996,325	3,033,119	252,760	111,636,478	0.03
Year 3	2029	28	3,814,246	5,721,369	9,535,616	5,721,369	11,442,739	17,164,108	1,559,890	71,235,247	4,155,389	346,282	114,427,390	0.04
Year 4	2030	29	3,909,602	5,864,404	9,774,006	5,864,404	11,728,807	17,593,211	2,137,057	91,493,312	5,337,110	444,759	117,288,075	0.05
Year 5	2031	30	4,007,343	6,011,014	10,018,356	6,011,014	12,022,028	18,033,041	2,744,799	112,812,144	6,580,708	548,392	120,220,276	0.05
Year 6	2032	31	4,107,526	6,161,289	10,268,815	6,161,289	12,322,578	18,483,868	3,384,364	135,234,892	7,888,702	657,392	123,225,783	0.06
Year 7	2033	32	4,210,214	6,315,321	10,525,536	6,315,321	12,630,643	18,945,964	4,057,047	158,806,281	9,263,700	771,975	126,306,428	0.07
Year 8	2034	33	4,315,470	6,473,204	10,788,674	6,473,204	12,946,409	19,419,613	4,764,188	183,572,672	10,708,406	892,367	129,464,089	0.08
Year 9	2035	34	4,423,356	6,635,035	11,058,391	6,635,035	13,270,069	19,905,104	5,507,180	209,582,108	12,225,623	1,018,802	132,700,691	0.09
Year 10	2036	35	4,533,940	6,800,910	11,334,851	6,800,910	13,601,821	20,402,731	6,287,463	236,884,385	13,818,256	1,151,521	136,018,208	0.10
Year 11	2037	36	4,647,289	6,970,933	11,618,222	6,970,933	13,941,866	20,912,799	7,106,532	265,531,100	15,489,314	1,290,776	139,418,663	0.11
Year 12	2038	37	4,763,471	7,145,206	11,908,677	7,145,206	14,290,413	21,435,619	7,965,933	295,575,721	17,241,917	1,436,826	142,904,130	0.12
Year 13	2039	38	4,882,558	7,323,837	12,206,394	7,323,837	14,647,673	21,971,510	8,867,272	327,073,648	19,079,296	1,589,941	146,476,733	0.13
Year 14	2040	39	5,004,622	7,506,933	12,511,554	7,506,933	15,013,865	22,520,798	9,812,209	360,082,279	21,004,800	1,750,400	150,138,651	0.14
Year 15	2041	40	5,129,737	7,694,606	12,824,343	7,694,606	15,389,212	23,083,818	10,802,468	394,661,079	23,021,896	1,918,491	153,892,118	0.15
Year 16	2042	41	5,257,981	7,886,971	13,144,952	7,886,971	15,773,942	23,660,913	11,839,832	430,871,652	25,134,180	2,094,515	157,739,421	0.16
Year 17	2043	42	5,389,430	8,084,145	13,473,576	8,084,145	16,168,291	24,252,436	12,926,150	468,777,811	27,345,372	2,278,781	161,682,906	0.17
Year 18	2044	43	5,524,166	8,286,249	13,810,415	8,286,249	16,572,498	24,858,747	14,063,334	508,445,655	29,659,330	2,471,611	165,724,979	0.18
Year 19	2045	44	5,662,270	8,493,405	14,155,675	8,493,405	16,986,810	25,480,216	15,253,370	549,943,646	32,080,046	2,673,337	169,868,103	0.19
Year 20	2046	45	5,803,827	8,705,740	14,509,567	8,705,740	17,411,481	26,117,221	16,498,309	593,342,693	34,611,657	2,884,305	174,114,806	0.20
Year 21	2047	46	5,948,923	8,923,384	14,872,306	8,923,384	17,846,768	26,770,151	17,800,281	638,716,230	37,258,447	3,104,871	178,467,676	0.21
Year 22	2048	47	6,097,646	9,146,468	15,244,114	9,146,468	18,292,937	27,439,405	19,161,487	686,140,304	40,024,851	3,335,404	182,929,368	0.22
Year 23	2049	48	6,250,087	9,375,130	15,625,217	9,375,130	18,750,260	28,125,390	20,584,209	735,693,665	42,915,464	3,576,289	187,502,602	0.23
Year 24	2050	49	6,406,339	9,609,508	16,015,847	9,609,508	19,219,017	28,828,525	22,070,810	787,457,856	45,935,042	3,827,920	192,190,167	0.24
Year 25	2051	50	6,566,497	9,849,746	16,416,243	9,849,746	19,699,492	29,549,238	23,623,736	841,517,307	49,088,510	4,090,709	196,994,921	0.25
Year 26	2052	51	6,730,660	10,095,990	16,826,650	10,095,990	20,191,979	30,287,969	25,245,519	897,959,434	52,380,967	4,365,081	201,919,794	0.26
Year 27	2053	52	6,898,926	10,348,389	17,247,316	10,348,389	20,696,779	31,045,168	26,938,783	956,874,741	55,817,693	4,651,474	206,967,789	0.27
Year 28	2054	53	7,071,399	10,607,099	17,678,499	10,607,099	21,214,198	31,821,298	28,706,242	1,018,356,920	59,404,154	4,950,346	212,141,984	0.28
Year 29	2055	54	7,248,184	10,872,277	18,120,461	10,872,277	21,744,553	32,616,830	30,550,708	1,082,502,962	63,146,006	5,262,167	217,445,534	0.29
Year 30	2056	55	7,429,389	11,144,084	18,573,473	11,144,084	22,288,167	33,432,251	32,475,089	1,149,413,269	67,049,107	5,587,426	222,881,672	0.30
Year 31	2057	56	7,615,124	11,422,686	19,037,809	11,422,686	22,845,371	34,268,057	34,482,398	1,219,191,766	71,119,520	5,926,627	228,453,714	0.31
Year 32	2058	57	7,805,502	11,708,253	19,513,755	11,708,253	23,416,506	35,124,758	36,575,753	1,291,946,020	75,363,518	6,280,293	234,165,057	0.32
Year 33	2059	58	8,000,639	12,000,959	20,001,599	12,000,959	24,001,918	36,002,877	38,758,381	1,367,787,365	79,787,596	6,648,966	240,019,183	0.33
Year 34	2060	59	8,200,655	12,300,983	20,501,639	12,300,983	24,601,966	36,902,949	41,033,621	1,446,831,024	84,398,476	7,033,206	246,019,663	0.34
Year 35	2061	60	8,405,672	12,608,508	21,014,180	12,608,508	25,217,015	37,825,523	43,404,931	1,529,196,243	89,203,114	7,433,593	252,170,154	0.35
Year 36	2062	61	8,615,814	12,923,720	21,539,534	12,923,720	25,847,441	38,771,161	45,875,887	1,615,006,427	94,208,708	7,850,726	258,474,408	0.36
Year 37	2063	62	8,831,209	13,246,813	22,078,022	13,246,813	26,493,627	39,740,440	48,450,193	1,704,389,273	99,422,708	8,285,226	264,936,268	0.38
Year 38	2064	63	9,051,989	13,577,984	22,629,973	13,577,984	27,155,967	40,733,951	51,131,678	1,797,476,921	104,852,820	8,737,735	271,559,675	0.39
Year 39	2065	64	9,278,289	13,917,433	23,195,722	13,917,433	27,834,867	41,752,300	53,924,308	1,894,406,097	110,507,022	9,208,919	278,348,667	0.40
Year 40	2066	65	9,510,246	14,265,369	23,775,615	14,265,369	28,530,738	42,796,108	56,832,183	1,995,318,271	116,393,566	9,699,464	285,307,383	0.41
Year 41	2067	66	9,748,002	14,622,003	24,370,006	14,622,003	29,244,007	43,866,010	59,859,548	2,100,359,810	122,520,989	10,210,082	292,440,068	0.42
Year 42	2068	67	9,991,702	14,987,553	24,979,256	14,987,553	29,975,107	44,962,660	63,010,794	2,209,682,144	128,898,125	10,741,510	299,751,070	0.43
Year 43	2069	68	10,241,495	15,362,242	25,603,737	15,362,242	30,724,485	46,086,727	66,290,464	2,323,441,937	135,534,113	11,294,509	307,244,847	0.44
Year 44	2070	69	10,497,532	15,746,298	26,243,831	15,746,298	31,492,597	47,238,895	69,703,258	2,441,801,258	142,438,407	11,869,867	314,925,968	0.45
Year 45	2071	70	10,759,971	16,139,956	26,899,926	16,139,956	32,279,912	48,419,868	73,254,038	2,564,927,759	149,620,786	12,468,399	322,799,117	0.46
Year 46	2072	71	11,028,970	16,543,455	27,572,425	16,543,455	33,086,909	49,630,364	76,947,833	2,692,994,867	157,091,367	13,090,947	330,869,095	0.47
Year 47	2073	72	11,304,694	16,957,041	28,261,735	16,957,041	33,914,082	50,871,123	80,789,846	2,826,181,970	164,860,615	13,738,385	339,140,822	0.49
Year 48	2074	73	11,587,311	17,380,967	28,968,279	17,380,967	34,761,934	52,142,901	84,785,459	2,964,674,617	172,939,353	14,411,613	347,619,343	0.50
Year 49	2075	74	11,876,994	17,815,491	29,692,486	17,815,491	35,630,983	53,446,474	88,940,239	3,108,664,724	181,338,776	15,111,565	356,309,826	0.51
Year 50	2076	75	12,173,919	18,260,879	30,434,798	18,260,879	36,521,757	54,782,636	93,259,942	3,258,350,781	190,070,462	15,839,205	365,217,572	0.52

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	1,330,377,418,849	2,660,754,837,699	3,991,132,256,548	-	-	4,110,866,224,244	957,643	79,804	106,257,207	0.01
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	1,363,636,854,320	2,727,273,708,641	4,090,910,562,961	123,325,986,727	67,144,148,329	8,380,685,942,492	1,952,315	162,693	108,913,637	0.02
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	1,397,727,775,678	2,795,455,551,357	4,193,183,327,035	251,420,578,275	136,884,537,061	12,814,200,810,553	2,985,120	248,760	111,636,478	0.03
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	1,432,670,970,070	2,865,341,940,141	4,298,012,910,211	384,426,024,317	209,298,613,239	17,416,281,519,148	4,057,194	338,099	114,427,390	0.04
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	1,468,487,744,322	2,936,975,488,644	4,405,463,232,967	522,488,445,574	284,465,931,479	22,191,931,163,199	5,169,701	430,808	117,288,075	0.04
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	1,505,199,937,930	3,010,399,875,861	4,515,599,813,791	665,757,934,896	362,468,208,999	27,146,288,697,301	6,323,839	526,987	120,220,276	0.05
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	1,542,829,936,379	3,085,659,872,757	4,628,489,809,136	814,388,660,919	443,389,382,056	32,284,632,479,573	7,520,837	626,736	123,225,783	0.06
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	1,581,400,684,788	3,162,801,369,576	4,744,202,054,364	968,538,974,387	527,315,663,833	37,612,383,906,122	8,761,958	730,163	126,306,428	0.07
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	1,620,935,701,908	3,241,871,403,815	4,862,807,105,723	1,128,371,517,184	614,335,603,800	43,135,111,138,401	10,048,500	837,375	129,464,089	0.08
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	1,661,459,094,455	3,322,918,188,911	4,984,377,283,366	1,294,053,334,152	704,540,148,594	48,858,532,925,826	11,381,795	948,483	132,700,691	0.09
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	1,702,995,571,817	3,405,991,143,634	5,108,986,715,450	1,465,755,987,775	798,022,704,455	54,788,522,526,060	12,763,210	1,063,601	136,018,208	0.09
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	1,745,570,461,112	3,491,140,922,224	5,236,711,383,337	1,643,655,675,782	894,879,201,259	60,931,111,725,419	14,194,151	1,182,846	139,418,663	0.10
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	1,789,209,722,640	3,578,419,445,280	5,367,629,167,920	1,827,933,351,763	995,208,158,182	67,292,494,961,957	15,676,062	1,306,338	142,904,130	0.11
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	1,833,939,965,706	3,667,879,931,412	5,501,819,897,118	2,018,774,848,859	1,099,110,751,045	73,879,033,553,802	17,210,423	1,434,202	146,476,733	0.12
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	1,879,788,464,849	3,759,576,929,697	5,639,365,394,546	2,216,371,006,614	1,206,690,881,379	80,697,260,035,420	18,798,756	1,566,563	150,138,651	0.13
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	1,926,783,176,470	3,853,566,352,940	5,780,349,529,410	2,420,917,801,063	1,318,055,247,245	87,753,882,604,529	20,442,625	1,703,552	153,892,118	0.13
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	1,974,952,755,882	3,949,905,511,763	5,924,858,267,645	2,632,616,478,136	1,433,313,415,874	95,055,789,682,465	22,143,634	1,845,303	157,739,421	0.14
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	2,024,326,574,779	4,048,653,149,557	6,072,979,724,336	2,851,673,690,474	1,552,577,898,147	102,610,054,590,858	23,903,431	1,991,953	161,682,906	0.15
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	2,074,934,739,148	4,149,869,478,296	6,224,804,217,444	3,078,301,637,726	1,675,964,224,984	110,423,940,347,568	25,723,708	2,143,642	165,724,979	0.16
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	2,126,808,107,627	4,253,616,215,254	6,380,424,322,880	3,312,718,210,427	1,803,591,025,677	118,504,904,584,885	27,606,202	2,300,517	169,868,103	0.16
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	2,179,978,310,317	4,359,956,620,635	6,539,934,930,952	3,555,147,137,547	1,935,580,108,220	126,860,604,593,092	29,552,696	2,462,725	174,114,806	0.17
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	2,234,477,768,075	4,468,955,536,151	6,703,433,304,226	3,805,818,137,793	2,072,056,541,687	135,498,902,492,551	31,565,023	2,630,419	178,467,676	0.18
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	2,290,339,712,277	4,580,679,424,555	6,871,019,136,832	4,064,967,074,777	2,213,148,740,712	144,427,870,537,553	33,645,062	2,803,755	182,929,368	0.18
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	2,347,598,205,084	4,695,196,410,168	7,042,794,615,253	4,332,836,116,127	2,358,988,552,113	153,655,796,555,276	35,794,745	2,982,895	187,502,602	0.19
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	2,406,288,160,211	4,812,576,320,423	7,218,864,480,634	4,609,673,896,658	2,509,711,343,736	163,191,189,523,251	38,016,054	3,168,005	192,190,167	0.20
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	2,466,445,364,217	4,932,890,728,433	7,399,336,092,650	4,895,735,685,698	2,665,456,095,546	173,042,785,288,832	40,311,024	3,359,252	196,994,921	0.20
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	2,528,106,498,322	5,056,212,996,644	7,584,319,494,966	5,191,283,558,665	2,826,365,493,051	183,219,552,434,261	42,681,743	3,556,812	201,919,794	0.21
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	2,591,309,160,780	5,182,618,321,560	7,773,927,482,340	5,496,586,573,028	2,992,586,023,093	193,730,698,291,006	45,130,357	3,760,863	206,967,789	0.22
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	2,656,091,889,800	5,312,183,779,599	7,968,275,669,399	5,811,920,948,730	3,164,268,072,086	204,585,675,107,131	47,659,069	3,971,589	212,141,984	0.22
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	2,722,494,187,045	5,444,988,374,089	8,167,482,561,134	6,137,570,253,214	3,341,566,026,750	215,794,186,371,563	50,270,137	4,189,178	217,445,534	0.23
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	2,790,556,541,721	5,581,113,083,441	8,371,669,625,162	6,473,825,591,147	3,524,638,377,402	227,366,193,299,224	52,965,883	4,413,824	222,881,672	0.24
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	2,860,320,455,264	5,720,640,910,527	8,580,961,365,791	6,820,985,798,977	3,713,647,823,887	239,311,921,481,079	55,748,689	4,645,724	228,453,714	0.24
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	2,931,828,466,645	5,863,656,933,291	8,795,485,399,936	7,179,357,644,432	3,908,761,384,191	251,641,867,703,254	58,621,001	4,885,083	234,165,057	0.25
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	3,005,124,178,311	6,010,248,356,623	9,015,372,534,934	7,549,256,031,098	4,110,150,505,820	264,366,806,939,514	61,585,327	5,132,111	240,019,183	0.26
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	3,080,252,282,769	6,160,504,565,538	9,240,756,848,308	7,931,004,208,185	4,317,991,180,012	277,497,799,521,445	64,644,246	5,387,020	246,019,663	0.26
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	3,157,258,589,838	6,314,517,179,677	9,471,775,769,515	8,324,933,985,643	4,532,464,058,850	291,046,198,490,839	67,800,401	5,650,033	252,170,154	0.27
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	3,236,190,054,584	6,472,380,109,169	9,708,570,163,753	8,731,385,954,725	4,753,754,575,350	305,023,657,138,879	71,056,507	5,921,376	258,474,408	0.27
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	3,317,094,805,949	6,634,189,611,898	9,951,284,417,847	9,150,709,714,166	4,982,053,066,602	319,442,136,736,826	74,415,350	6,201,279	264,936,268	0.28
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	3,400,022,176,098	6,800,044,352,196	10,200,066,528,293	9,583,264,102,105	5,217,554,900,035	334,313,914,463,039	77,879,792	6,489,983	271,559,675	0.29
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	3,485,022,730,500	6,970,045,461,000	10,455,068,191,501	10,029,417,433,891	5,460,460,602,896	349,651,591,531,279	81,452,766	6,787,731	278,348,667	0.29
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	3,572,148,298,763	7,144,296,597,525	10,716,444,896,288	10,489,547,745,938	5,710,975,995,011	365,468,101,525,383	85,137,287	7,094,774	285,307,383	0.30
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	3,661,452,006,232	7,322,904,012,464	10,984,356,018,695	10,964,043,045,762	5,969,312,324,915	381,776,718,945,486	88,936,446	7,411,370	292,440,068	0.30
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	3,752,988,306,388	7,505,976,612,775	11,258,964,919,163	11,453,301,568,365	6,235,686,409,443	398,591,067,971,146	92,853,417	7,737,785	299,751,070	0.31
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	3,846,813,014,047	7,693,626,028,095	11,540,439,042,142	11,957,732,039,134	6,510,320,776,862	415,925,131,446,824	96,891,458	8,074,288	307,244,847	0.32
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	3,942,983,339,398	7,885,966,678,797	11,828,950,018,195	12,477,753,943,405	6,793,443,813,631	433,793,260,095,338	101,053,912	8,421,159	314,925,968	0.32
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	4,041,557,922,883	8,083,115,845,767	12,124,673,768,650	13,013,797,802,860	7,085,289,914,891	452,210,181,965,018	105,344,209	8,778,684	322,799,117	0.33
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	4,142,596,870,955	8,285,193,741,911	12,427,790,612,867	13,566,305,458,951	7,386,099,638,762	471,191,012,116,459	109,765,871	9,147,156	330,869,095	0.33
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	4,246,161,792,729	8,492,323,585,459	12,738,485,378,188	14,135,730,363,494	7,696,119,864,569	490,751,262,554,918	114,322,511	9,526,876	339,140,822	0.34
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	4,352,315,837,548	8,704,631,675,095	13,056,947,512,643	14,722,537,876,648	8,015,603,955,064	510,906,852,414,524	119,017,838	9,918,153	347,619,343	0.34
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	4,461,123,733,486	8,922,247,466,973	13,383,371,200,459	15,327,205,572,436	8,344,811,922,771	531,674,118,400,661	123,855,657	10,321,305	356,309,826	0.35
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	4,572,651,826,823	9,145,303,653,647	13,717,955,480,470	15,950,223,552,020	8,684,010,600,544	553,069,825,497,022	128,839,875	10,736,656	365,217,572	0.35

Note:

Pension benefits paid: 2% of pensioners every year

Appendix 6i: Prediction of CSP Benefits with DC Scheme (IDR) for Option 8

Individual

Working Year	Year	Age	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
			40%	60%										
Year 0	2026	25	3,541,907	5,312,860	8,854,767	10,625,721	10,625,721	21,251,441	-	21,888,985	1,276,857	106,405	106,257,207	0.01
Year 1	2027	26	3,630,455	5,445,682	9,076,136	10,891,364	10,891,364	21,782,727	656,670	44,981,863	2,623,942	218,662	108,913,637	0.02
Year 2	2028	27	3,721,216	5,581,824	9,303,040	11,163,648	11,163,648	22,327,296	1,349,456	69,328,434	4,044,159	337,013	111,636,478	0.04
Year 3	2029	28	3,814,246	5,721,369	9,535,616	11,442,739	11,442,739	22,885,478	2,079,853	94,980,329	5,540,519	461,710	114,427,390	0.05
Year 4	2030	29	3,909,602	5,864,404	9,774,006	11,728,807	11,728,807	23,457,615	2,849,410	121,991,082	7,116,146	593,012	117,288,075	0.06
Year 5	2031	30	4,007,343	6,011,014	10,018,356	12,022,028	12,022,028	24,044,055	3,659,732	150,416,192	8,774,278	731,190	120,220,276	0.07
Year 6	2032	31	4,107,526	6,161,289	10,268,815	12,322,578	12,322,578	24,645,157	4,512,486	180,313,189	10,518,269	876,522	123,225,783	0.09
Year 7	2033	32	4,210,214	6,315,321	10,525,536	12,630,643	12,630,643	25,261,286	5,409,396	211,741,709	12,351,600	1,029,300	126,306,428	0.10
Year 8	2034	33	4,315,470	6,473,204	10,788,674	12,946,409	12,946,409	25,892,818	6,352,251	244,763,562	14,277,874	1,189,823	129,464,089	0.11
Year 9	2035	34	4,423,356	6,635,035	11,058,391	13,270,069	13,270,069	26,540,138	7,342,907	279,442,811	16,300,831	1,358,403	132,700,691	0.12
Year 10	2036	35	4,533,940	6,800,910	11,334,851	13,601,821	13,601,821	27,203,642	8,383,284	315,845,846	18,424,341	1,535,362	136,018,208	0.14
Year 11	2037	36	4,647,289	6,970,933	11,618,222	13,941,866	13,941,866	27,883,733	9,475,375	354,041,466	20,652,419	1,721,035	139,418,663	0.15
Year 12	2038	37	4,763,471	7,145,206	11,908,677	14,290,413	14,290,413	28,580,826	10,621,244	394,100,961	22,989,223	1,915,769	142,904,130	0.16
Year 13	2039	38	4,882,558	7,323,837	12,206,394	14,647,673	14,647,673	29,295,347	11,823,029	436,098,197	25,439,061	2,119,922	146,476,733	0.17
Year 14	2040	39	5,004,622	7,506,933	12,511,554	15,013,865	15,013,865	30,027,730	13,082,946	480,109,705	28,006,399	2,333,867	150,138,651	0.19
Year 15	2041	40	5,129,737	7,694,606	12,824,343	15,389,212	15,389,212	30,778,424	14,403,291	526,214,773	30,695,862	2,557,988	153,892,118	0.20
Year 16	2042	41	5,257,981	7,886,971	13,144,952	15,773,942	15,773,942	31,547,884	15,786,443	574,495,536	33,512,240	2,792,687	157,739,421	0.21
Year 17	2043	42	5,389,430	8,084,145	13,473,576	16,168,291	16,168,291	32,336,581	17,234,866	625,037,081	36,460,496	3,038,375	161,682,906	0.23
Year 18	2044	43	5,524,166	8,286,249	13,810,415	16,572,498	16,572,498	33,144,996	18,751,112	677,927,539	39,545,773	3,295,481	165,724,979	0.24
Year 19	2045	44	5,662,270	8,493,405	14,155,675	16,986,810	16,986,810	33,973,621	20,337,826	733,258,195	42,773,395	3,564,450	169,868,103	0.25
Year 20	2046	45	5,803,827	8,705,740	14,509,567	17,411,481	17,411,481	34,822,961	21,997,746	791,123,591	46,148,876	3,845,740	174,114,806	0.27
Year 21	2047	46	5,948,923	8,923,384	14,872,306	17,846,768	17,846,768	35,693,535	23,733,708	851,621,640	49,677,929	4,139,827	178,467,676	0.28
Year 22	2048	47	6,097,646	9,146,468	15,244,114	18,292,937	18,292,937	36,585,874	25,548,649	914,853,739	53,366,468	4,447,206	182,929,368	0.29
Year 23	2049	48	6,250,087	9,375,130	15,625,217	18,750,260	18,750,260	37,500,520	27,445,612	980,924,887	57,220,618	4,768,385	187,502,602	0.31
Year 24	2050	49	6,406,339	9,609,508	16,015,847	19,219,017	19,219,017	38,438,033	29,427,747	1,049,943,808	61,246,722	5,103,894	192,190,167	0.32
Year 25	2051	50	6,566,497	9,849,746	16,416,243	19,699,492	19,699,492	39,398,984	31,498,314	1,122,023,076	65,451,346	5,454,279	196,994,921	0.33
Year 26	2052	51	6,730,660	10,095,990	16,826,650	20,191,979	20,191,979	40,383,959	33,660,692	1,197,279,246	69,841,289	5,820,107	201,919,794	0.35
Year 27	2053	52	6,898,926	10,348,389	17,247,316	20,696,779	20,696,779	41,393,558	35,918,377	1,275,832,988	74,423,591	6,201,966	206,967,789	0.36
Year 28	2054	53	7,071,399	10,607,099	17,678,499	21,214,198	21,214,198	42,428,397	38,274,990	1,357,809,226	79,205,538	6,600,462	212,141,984	0.37
Year 29	2055	54	7,248,184	10,872,277	18,120,461	21,744,553	21,744,553	43,489,107	40,734,277	1,443,337,283	84,194,675	7,016,223	217,445,534	0.39
Year 30	2056	55	7,429,389	11,144,084	18,573,473	22,288,167	22,288,167	44,576,334	43,300,118	1,532,551,026	89,398,810	7,449,901	222,881,672	0.40
Year 31	2057	56	7,615,124	11,422,686	19,037,809	22,845,371	22,845,371	45,690,743	45,976,531	1,625,589,022	94,826,026	7,902,169	228,453,714	0.42
Year 32	2058	57	7,805,502	11,708,253	19,513,755	23,416,506	23,416,506	46,833,011	48,767,671	1,722,594,694	100,484,690	8,373,724	234,165,057	0.43
Year 33	2059	58	8,000,639	12,000,959	20,001,599	24,001,918	24,001,918	48,003,837	51,677,841	1,823,716,486	106,383,462	8,865,288	240,019,183	0.44
Year 34	2060	59	8,200,655	12,300,983	20,501,639	24,601,966	24,601,966	49,203,933	54,711,495	1,929,108,032	112,531,302	9,377,608	246,019,663	0.46
Year 35	2061	60	8,405,672	12,608,508	21,014,180	25,217,015	25,217,015	50,434,031	57,873,241	2,038,928,324	118,937,486	9,911,457	252,170,154	0.47
Year 36	2062	61	8,615,814	12,923,720	21,539,534	25,847,441	25,847,441	51,694,882	61,167,850	2,153,341,902	125,611,611	10,467,634	258,474,408	0.49
Year 37	2063	62	8,831,209	13,246,813	22,078,022	26,493,627	26,493,627	52,987,254	64,600,257	2,272,519,030	132,563,610	11,046,968	264,936,268	0.50
Year 38	2064	63	9,051,989	13,577,984	22,629,973	27,155,967	27,155,967	54,311,935	68,175,571	2,396,635,894	139,803,761	11,650,313	271,559,675	0.51
Year 39	2065	64	9,278,289	13,917,433	23,195,722	27,834,867	27,834,867	55,669,733	71,899,077	2,525,874,797	147,342,696	12,278,558	278,348,667	0.53
Year 40	2066	65	9,510,246	14,265,369	23,775,615	28,530,738	28,530,738	57,061,477	75,776,244	2,660,424,361	155,191,421	12,932,618	285,307,383	0.54
Year 41	2067	66	9,748,002	14,622,003	24,370,006	29,244,007	29,244,007	58,488,014	79,812,731	2,800,479,746	163,361,319	13,613,443	292,440,068	0.56
Year 42	2068	67	9,991,702	14,987,553	24,979,256	29,975,107	29,975,107	59,950,214	84,014,392	2,946,242,859	171,864,167	14,322,014	299,751,070	0.57
Year 43	2069	68	10,241,495	15,362,242	25,603,737	30,724,485	30,724,485	61,448,969	88,387,286	3,097,922,583	180,712,151	15,059,346	307,244,847	0.59
Year 44	2070	69	10,497,532	15,746,298	26,243,831	31,492,597	31,492,597	62,985,194	92,937,677	3,255,735,010	189,917,876	15,826,490	314,925,968	0.60
Year 45	2071	70	10,759,971	16,139,956	26,899,926	32,279,912	32,279,912	64,559,823	97,672,050	3,419,903,678	199,494,381	16,624,532	322,799,117	0.62
Year 46	2072	71	11,028,970	16,543,455	27,572,425	33,086,909	33,086,909	66,173,819	102,597,110	3,590,659,822	209,455,156	17,454,596	330,869,095	0.63
Year 47	2073	72	11,304,694	16,957,041	28,261,735	33,914,082	33,914,082	67,828,164	107,719,795	3,768,242,626	219,814,153	18,317,846	339,140,822	0.65
Year 48	2074	73	11,587,311	17,380,967	28,968,279	34,761,934	34,761,934	69,523,869	113,047,279	3,952,899,490	230,585,804	19,215,484	347,619,343	0.66
Year 49	2075	74	11,876,994	17,815,491	29,692,486	35,630,983	35,630,983	71,261,965	118,586,985	4,144,886,299	241,785,034	20,148,753	356,309,826	0.68
Year 50	2076	75	12,173,919	18,260,879	30,434,798	36,521,757	36,521,757	73,043,514	124,346,589	4,344,467,707	253,427,283	21,118,940	365,217,572	0.69

Aggregate

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution	Total Contribution	Investment Returns	Pension Benefits Paid	Fund Balance	Annual Pension Benefits	Monthly Pension Benefits	Final Annual THP	RR (Average)
				40%	60%											
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	2,660,754,837,699	2,660,754,837,699	5,321,509,675,397	-	-	5,481,154,965,659	1,276,857	106,405	106,257,207	0.01
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	2,727,273,708,641	2,727,273,708,641	5,454,547,417,282	164,434,648,970	89,525,531,106	11,174,247,923,323	2,603,087	216,924	108,913,637	0.02
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	2,795,455,551,357	2,795,455,551,357	5,590,911,102,714	335,227,437,700	182,512,716,081	17,085,601,080,737	3,980,161	331,680	111,636,478	0.04
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	2,865,341,940,141	2,865,341,940,141	5,730,683,880,282	512,568,032,422	279,064,817,652	23,221,708,692,198	5,409,592	450,799	114,427,390	0.05
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	2,936,975,488,644	2,936,975,488,644	5,873,950,977,289	696,651,260,766	379,287,908,639	29,589,241,550,932	6,892,935	574,411	117,288,075	0.06
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	3,010,399,875,861	3,010,399,875,861	6,020,799,751,721	887,677,246,528	483,290,945,332	36,195,051,596,401	8,431,785	702,649	120,220,276	0.07
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	3,085,659,872,757	3,085,659,872,757	6,171,319,745,514	1,085,851,547,892	591,185,842,741	43,046,176,639,431	10,027,783	835,649	123,225,783	0.08
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	3,162,801,369,576	3,162,801,369,576	6,325,602,739,152	1,291,385,299,183	703,087,551,777	50,149,845,208,163	11,682,611	973,551	126,306,428	0.09
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	3,241,871,403,815	3,241,871,403,815	6,483,742,807,631	1,504,495,356,245	819,114,138,400	57,513,481,517,868	13,398,000	1,116,500	129,464,089	0.10
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	3,322,918,188,911	3,322,918,188,911	6,645,836,377,822	1,725,404,445,536	939,386,864,792	65,144,710,567,768	15,175,726	1,264,644	132,700,691	0.11
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	3,405,991,143,634	3,405,991,143,634	6,811,982,287,267	1,954,341,317,033	1,064,030,272,607	73,051,363,368,080	17,017,613	1,418,134	136,018,208	0.13
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	3,491,140,922,224	3,491,140,922,224	6,982,281,844,449	2,191,540,901,042	1,193,172,268,345	81,241,482,300,559	18,925,535	1,577,128	139,418,663	0.14
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	3,578,419,445,280	3,578,419,445,280	7,156,838,890,560	2,437,244,469,017	1,326,944,210,909	89,723,326,615,943	20,901,415	1,741,785	142,904,130	0.15
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	3,667,879,931,412	3,667,879,931,412	7,335,759,862,824	2,691,699,798,478	1,465,481,001,394	98,505,378,071,736	22,947,230	1,912,269	146,476,733	0.16
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	3,759,576,929,697	3,759,576,929,697	7,519,153,859,395	2,955,161,342,152	1,608,921,175,172	107,596,346,713,893	25,065,008	2,088,751	150,138,651	0.17
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	3,853,566,352,940	3,853,566,352,940	7,707,132,705,879	3,227,890,401,417	1,757,406,996,327	117,005,176,806,039	27,256,834	2,271,403	153,892,118	0.18
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	3,949,905,511,763	3,949,905,511,763	7,899,811,023,526	3,510,155,304,181	1,911,084,554,499	126,741,052,909,954	29,524,846	2,460,404	157,739,421	0.19
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	4,048,653,149,557	4,048,653,149,557	8,097,306,299,115	3,802,231,587,299	2,070,103,864,196	136,813,406,121,144	31,871,242	2,655,937	161,682,906	0.20
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	4,149,869,478,296	4,149,869,478,296	8,299,738,956,592	4,104,402,183,634	2,234,618,966,645	147,231,920,463,424	34,298,277	2,858,190	165,724,979	0.21
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	4,253,616,215,254	4,253,616,215,254	8,507,232,430,507	4,416,957,613,903	2,404,788,034,236	158,006,539,446,513	36,808,269	3,067,356	169,868,103	0.22
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	4,359,956,620,635	4,359,956,620,635	8,719,913,241,270	4,740,196,183,395	2,580,773,477,626	169,147,472,790,790	39,403,595	3,283,633	174,114,806	0.23
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	4,468,955,536,151	4,468,955,536,151	8,937,911,072,302	5,074,424,183,724	2,762,742,055,583	180,665,203,323,401	42,086,697	3,507,225	178,467,676	0.24
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	4,580,679,424,555	4,580,679,424,555	9,161,358,849,109	5,419,956,099,702	2,950,864,987,616	192,570,494,050,070	44,860,083	3,738,340	182,929,368	0.25
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	4,695,196,410,168	4,695,196,410,168	9,390,392,820,337	5,777,114,821,502	3,145,318,069,484	204,874,395,407,035	47,726,327	3,977,194	187,502,602	0.25
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	4,812,576,320,423	4,812,576,320,423	9,625,152,640,845	6,146,231,862,211	3,346,281,791,648	217,588,252,697,669	50,688,072	4,224,006	192,190,167	0.26
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	4,932,890,728,433	4,932,890,728,433	9,865,781,456,867	6,527,647,580,930	3,553,941,460,729	230,723,713,718,443	53,748,031	4,479,003	196,994,921	0.27
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	5,056,212,996,644	5,056,212,996,644	10,112,425,993,288	6,921,711,411,553	3,768,487,324,068	244,292,736,579,015	56,908,991	4,742,416	201,919,794	0.28
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	5,182,618,321,560	5,182,618,321,560	10,365,236,643,120	7,328,782,097,370	3,990,114,697,457	258,307,597,721,342	60,173,810	5,014,484	206,967,789	0.29
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	5,312,183,779,599	5,312,183,779,599	10,624,367,559,198	7,749,227,931,640	4,219,024,096,115	272,780,900,142,841	63,545,425	5,295,452	212,141,984	0.30
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	5,444,988,374,089	5,444,988,374,089	10,889,976,748,178	8,183,427,004,285	4,455,421,369,000	287,725,581,828,751	67,026,849	5,585,571	217,445,534	0.31
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	5,581,113,083,441	5,581,113,083,441	11,162,226,166,883	8,631,767,454,863	4,699,517,836,536	303,154,924,398,966	70,621,178	5,885,098	222,881,672	0.32
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	5,720,640,910,527	5,720,640,910,527	11,441,281,821,055	9,094,647,731,969	4,951,530,431,850	319,082,561,974,772	74,331,586	6,194,299	228,453,714	0.33
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	5,863,656,933,291	5,863,656,933,291	11,727,313,866,581	9,572,476,859,243	5,211,681,845,588	335,522,490,271,006	78,161,334	6,513,445	234,165,057	0.33
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	6,010,248,356,623	6,010,248,356,623	12,020,496,713,246	10,065,674,708,130	5,480,200,674,426	352,489,075,919,353	82,113,770	6,842,814	240,019,183	0.34
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	6,160,504,565,538	6,160,504,565,538	12,321,009,131,077	10,574,672,277,581	5,757,321,573,349	369,997,066,028,593	86,192,328	7,182,694	246,019,663	0.35
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	6,314,517,179,677	6,314,517,179,677	12,629,034,359,354	11,099,911,980,858	6,043,285,411,800	388,061,597,987,785	90,400,534	7,533,378	252,170,154	0.36
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	6,472,380,109,169	6,472,380,109,169	12,944,760,218,338	11,641,847,939,634	6,338,339,433,800	406,698,209,518,506	94,742,009	7,895,167	258,474,408	0.37
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	6,634,189,611,898	6,634,189,611,898	13,268,379,223,796	12,200,946,285,555	6,642,737,422,136	425,922,848,982,435	99,220,467	8,268,372	264,936,268	0.37
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	6,800,044,352,196	6,800,044,352,196	13,600,088,704,391	12,777,685,469,473	6,956,739,866,713	445,751,885,950,718	103,839,722	8,653,310	271,559,675	0.38
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	6,970,045,461,000	6,970,045,461,000	13,940,090,922,001	13,372,556,578,522	7,280,614,137,195	466,202,122,041,705	108,603,688	9,050,307	278,348,667	0.39
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	7,144,296,597,525	7,144,296,597,525	14,288,593,195,051	13,986,063,661,251	7,614,634,660,015	487,290,802,033,844	113,516,382	9,459,699	285,307,383	0.40
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	7,322,904,012,464	7,322,904,012,464	14,645,808,024,927	14,618,724,061,015	7,959,083,099,886	509,035,625,260,649	118,581,928	9,881,827	292,440,068	0.41
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	7,505,976,612,775	7,505,976,612,775	15,011,953,225,550	15,271,068,757,820	8,314,248,545,924	531,454,757,294,861	123,804,556	10,317,046	299,751,070	0.41
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	7,693,626,028,095	7,693,626,028,095	15,387,252,056,189	15,943,642,718,846	8,680,427,702,483	554,566,841,929,099	129,188,611	10,765,718	307,244,847	0.42
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	7,885,966,678,797	7,885,966,678,797	15,771,933,357,594	16,637,005,257,873	9,057,925,084,842	578,391,013,460,451	134,738,549	11,228,212	314,925,968	0.43
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	8,083,115,845,767	8,083,115,845,767	16,166,231,691,534	17,351,730,403,814	9,447,053,219,854	602,946,909,286,691	140,458,945	11,704,912	322,799,117	0.44
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	8,285,193,741,911	8,285,193,741,911	16,570,387,483,822	18,088,407,278,601	9,848,132,851,683	628,254,682,821,945	146,354,494	12,196,208	330,869,095	0.44
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	8,492,323,585,459	8,492,323,585,459	16,984,647,170,918	18,847,640,484,658	10,261,493,152,758	654,335,016,739,890	152,430,015	12,702,501	339,140,822	0.45
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	8,704,631,675,095	8,704,631,675,095	17,409,263,350,190	19,630,050,502,197	10,687,471,940,085	681,209,136,552,698	158,690,450	13,224,204	347,619,343	0.46
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	8,922,247,466,973	8,922,247,466,973	17,844,494,933,945	20,436,274,096,581	11,126,415,897,027	708,898,824,534,215	165,140,876	13,761,740	356,309,826	0.46
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	9,145,303,653,647	9,145,303,653,647	18,290,607,307,294	21,266,964,736,027	11,578,680,800,726	737,426,433,996,029	171,786,500	14,315,542	365,217,572	0.47

Note:

Pension benefits paid: 2% of pensioners every year

Appendix 6j: Government Budget Prediction of CSP Benefits with DC Scheme (IDR)

Number	Year	Age	Civil Servants	Salary (Average)	Performance Allowance	Total Take Home Pay	Annual Civil Servants' Contribution	Annual Government Contribution
				40%	60%			
Year 0	2026	25	250,407	3,541,907	5,312,860	8,854,767	2,660,754,837,699	2,660,754,837,699
Year 1	2027	26	250,407	3,630,455	5,445,682	9,076,136	2,727,273,708,641	2,727,273,708,641
Year 2	2028	27	250,407	3,721,216	5,581,824	9,303,040	2,795,455,551,357	2,795,455,551,357
Year 3	2029	28	250,407	3,814,246	5,721,369	9,535,616	2,865,341,940,141	2,865,341,940,141
Year 4	2030	29	250,407	3,909,602	5,864,404	9,774,006	2,936,975,488,644	2,936,975,488,644
Year 5	2031	30	250,407	4,007,343	6,011,014	10,018,356	3,010,399,875,861	3,010,399,875,861
Year 6	2032	31	250,407	4,107,526	6,161,289	10,268,815	3,085,659,872,757	3,085,659,872,757
Year 7	2033	32	250,407	4,210,214	6,315,321	10,525,536	3,162,801,369,576	3,162,801,369,576
Year 8	2034	33	250,407	4,315,470	6,473,204	10,788,674	3,241,871,403,815	3,241,871,403,815
Year 9	2035	34	250,407	4,423,356	6,635,035	11,058,391	3,322,918,188,911	3,322,918,188,911
Year 10	2036	35	250,407	4,533,940	6,800,910	11,334,851	3,405,991,143,634	3,405,991,143,634
Year 11	2037	36	250,407	4,647,289	6,970,933	11,618,222	3,491,140,922,224	3,491,140,922,224
Year 12	2038	37	250,407	4,763,471	7,145,206	11,908,677	3,578,419,445,280	3,578,419,445,280
Year 13	2039	38	250,407	4,882,558	7,323,837	12,206,394	3,667,879,931,412	3,667,879,931,412
Year 14	2040	39	250,407	5,004,622	7,506,933	12,511,554	3,759,576,929,697	3,759,576,929,697
Year 15	2041	40	250,407	5,129,737	7,694,606	12,824,343	3,853,566,352,940	3,853,566,352,940
Year 16	2042	41	250,407	5,257,981	7,886,971	13,144,952	3,949,905,511,763	3,949,905,511,763
Year 17	2043	42	250,407	5,389,430	8,084,145	13,473,576	4,048,653,149,557	4,048,653,149,557
Year 18	2044	43	250,407	5,524,166	8,286,249	13,810,415	4,149,869,478,296	4,149,869,478,296
Year 19	2045	44	250,407	5,662,270	8,493,405	14,155,675	4,253,616,215,254	4,253,616,215,254
Year 20	2046	45	250,407	5,803,827	8,705,740	14,509,567	4,359,956,620,635	4,359,956,620,635
Year 21	2047	46	250,407	5,948,923	8,923,384	14,872,306	4,468,955,536,151	4,468,955,536,151
Year 22	2048	47	250,407	6,097,646	9,146,468	15,244,114	4,580,679,424,555	4,580,679,424,555
Year 23	2049	48	250,407	6,250,087	9,375,130	15,625,217	4,695,196,410,168	4,695,196,410,168
Year 24	2050	49	250,407	6,406,339	9,609,508	16,015,847	4,812,576,320,423	4,812,576,320,423
Year 25	2051	50	250,407	6,566,497	9,849,746	16,416,243	4,932,890,728,433	4,932,890,728,433
Year 26	2052	51	250,407	6,730,660	10,095,990	16,826,650	5,056,212,996,644	5,056,212,996,644
Year 27	2053	52	250,407	6,898,926	10,348,389	17,247,316	5,182,618,321,560	5,182,618,321,560
Year 28	2054	53	250,407	7,071,399	10,607,099	17,678,499	5,312,183,779,599	5,312,183,779,599
Year 29	2055	54	250,407	7,248,184	10,872,277	18,120,461	5,444,988,374,089	5,444,988,374,089
Year 30	2056	55	250,407	7,429,389	11,144,084	18,573,473	5,581,113,083,441	5,581,113,083,441
Year 31	2057	56	250,407	7,615,124	11,422,686	19,037,809	5,720,640,910,527	5,720,640,910,527
Year 32	2058	57	250,407	7,805,502	11,708,253	19,513,755	5,863,656,933,291	5,863,656,933,291
Year 33	2059	58	250,407	8,000,639	12,000,959	20,001,599	6,010,248,356,623	6,010,248,356,623
Year 34	2060	59	250,407	8,200,655	12,300,983	20,501,639	6,160,504,565,538	6,160,504,565,538
Year 35	2061	60	250,407	8,405,672	12,608,508	21,014,180	6,314,517,179,677	6,314,517,179,677
Year 36	2062	61	250,407	8,615,814	12,923,720	21,539,534	6,472,380,109,169	6,472,380,109,169
Year 37	2063	62	250,407	8,831,209	13,246,813	22,078,022	6,634,189,611,898	6,634,189,611,898
Year 38	2064	63	250,407	9,051,989	13,577,984	22,629,973	6,800,044,352,196	6,800,044,352,196
Year 39	2065	64	250,407	9,278,289	13,917,433	23,195,722	6,970,045,461,000	6,970,045,461,000
Year 40	2066	65	250,407	9,510,246	14,265,369	23,775,615	7,144,296,597,525	7,144,296,597,525
Year 41	2067	66	250,407	9,748,002	14,622,003	24,370,006	7,322,904,012,464	7,322,904,012,464
Year 42	2068	67	250,407	9,991,702	14,987,553	24,979,256	7,505,976,612,775	7,505,976,612,775
Year 43	2069	68	250,407	10,241,495	15,362,242	25,603,737	7,693,626,028,095	7,693,626,028,095
Year 44	2070	69	250,407	10,497,532	15,746,298	26,243,831	7,885,966,678,797	7,885,966,678,797
Year 45	2071	70	250,407	10,759,971	16,139,956	26,899,926	8,083,115,845,767	8,083,115,845,767
Year 46	2072	71	250,407	11,028,970	16,543,455	27,572,425	8,285,193,741,911	8,285,193,741,911
Year 47	2073	72	250,407	11,304,694	16,957,041	28,261,735	8,492,323,585,459	8,492,323,585,459
Year 48	2074	73	250,407	11,587,311	17,380,967	28,968,279	8,704,631,675,095	8,704,631,675,095
Year 49	2075	74	250,407	11,876,994	17,815,491	29,692,486	8,922,247,466,973	8,922,247,466,973
Year 50	2076	75	250,407	12,173,919	18,260,879	30,434,798	9,145,303,653,647	9,145,303,653,647

Appendix 7: Interview Transcript with Didik Kusnaini, the Director of Budget Regulation Harmonization, at the Directorate General of Budget, Ministry of Finance of the Republic of Indonesia

Adequacy

1. In your opinion, how adequate is the civil servant pension system in Indonesia?

The Indonesian government provides 2 programs to ensure the welfare of civil servants in old age, namely the pension program and Old Age Savings (THT). The pension program for civil servants is currently implemented using a defined benefit scheme with a pay as you go financing system. Meanwhile, the THT program uses a hybrid scheme, namely defined benefits and defined contributions. Civil servants as participants pay contributions of 4.75% of the basic salary for the pension program and 3.25% of the basic salary for the THT program. In accordance with the provisions in Government Regulation number 20 of 1985 as amended by Government Regulation number 25 of 2013 concerning Civil Servant Social Insurance, in the event that the Government has not paid the pension and THT program contributions, the Government will pay all or part of the pension benefits and past obligations of the THT program that have not yet been paid. fulfilled from the APBN. Until now there have been no problems in funding the civil servant pension program.

2. How to increase its adequacy?

Every year the Government always allocates pension benefit payments in the APBN. For the THT program, benefits are paid using accumulated contributions and development results. If there is a policy change, the Government pays the THT program's past obligations to the organizing body.

3. How much will the Indonesian government's budget increase to meet this adequacy?

The increase in the pension budget in the short term is very dependent on fiscal policy in each year and in the long term it depends on the Government's personnel policy. Starting in 2015, the Government will no longer increase the basic salary of civil servants which is used as a basis for calculating pension benefits. This policy reduces pressure on a significant increase in spending allocations. In 2019 the Government again increased civil servant salaries by an average of 5%. In 2024 the Government will again increase the salaries of civil servants by 8% and pensioners by 12%. Under conditions like this, there will certainly be a spike in spending allocations in certain years. The increase in budget allocations under normal conditions since 2015 has averaged 4%.

Sustainability

1. In your opinion, how sustainable is the civil servant pension system in Indonesia?

There are no problems with the sustainability of the civil servant pension system in terms of comparison with GDP or with the allocation of employee spending in the APBN. The Government's desire to review the pension program and THT program for civil servants is because the assumptions used to design the program are deemed no longer relevant to current conditions. Things that need to be reviewed in designing a pension program are the structure and components of civil servant income, civil servant mortality, the characteristics of new civil servants, the need for program accountability and the development of investment instruments.

2. How big is the risk of unsustainability of the current civil servant pension system?

As the Indonesian economy continues to grow, tax revenues as the backbone of APBN revenues are becoming more intensive and increasing, the current civil servant pension system is projected to still be sustainable.

3. How to design a more sustainable pension system? What and how much does it cost?

The government is still continuing to perfect the study of the design of the new civil servant pension system. The costs incurred are strongly correlated with the projected benefits that will be provided. The Government's consideration in designing the new program is the ability to pay contributions for civil servants as participants, the Regional Government as the employer and the amount of the replacement ratio. Apart from that, income disparities between civil servants are also a variable that needs attention.

Pension Reforms

1. The ASN Law stipulates that the Indonesian government must reform the civil servant pension system. In your opinion, does Indonesia need to reform the civil servant pension system?

Pension system improvements are carried out to update the pension program design in accordance with current conditions.

2. Why hasn't the Indonesian government implemented pension reform? What are the obstacles to doing so?

The ability of employees and Regional Government to pay contributions is the Government's main concern. Ideally salary reform is implemented first before pension reform.

3. Which is better, partial reform (not changing the existing system) or comprehensive pension reform (changing the system) for Indonesia?

Changes to the pension system have major fiscal implications, are very long in duration and very broad in scope. Therefore, the consideration must be comprehensive. Apart from technical considerations, it is also necessary to study the implications from a political perspective. Support from parliament is very necessary. This will influence the decision on whether the option to be taken is revolutionary or partial.

4. What are the benefits if Indonesia changes its pension scheme from defined benefit to defined contribution? What are the risks/probabilities of the new pension system?

Benefits definitely guarantee the amount of benefits to participants, but the funding is difficult to measure. Vice versa with defined contributions. As mandated by the ASN Law, the pension program apart from functioning as a form of appreciation for civil servants by providing guaranteed protection in old age for their service, is also designed so that the costs are more measurable and controlled.

4. Can Indonesia reform the civil servant pension system by considering the costs and benefits of reform with various risk scenarios?

It really depends on the work program priorities decided by the President.

5. Has the Ministry of Finance carried out fiscal simulations for changes to the pension system? What are the results of the simulation?

The Ministry of Finance together with other related agencies have created simulations with several existing scenarios. The scenario and its implications are currently being refined to be presented at a limited cabinet meeting.

Appendix 8: Interview Transcript with Robert Palacios, the Lead Economist at the World Bank

1. How is adequacy of Civil Service Pension (CSP) System Benefit?

That is an interesting question because the replacement rate (RR) as you know is fairly high. The problem is, as you know from our report, that the pensionable wage base is much lower than actual take home pay (THP) of the civil servants (CS). So, it really depends on what the ratio of the pensionable wage is to the total THP and it varies quite substantially across grades and across ministries and at the subnational versus the national level, central government level. So, on average we were thinking in terms of 45-50% of the total remuneration is being replaced. That means that the retirement rate is not that high. Adequacy is a little bit subjective. But I would say, it is not especially adequate. I think it will be lower than some OECD countries that we would benchmark against. But at the same time, it is not very low. It is just, it depends on the ratio of the pensionable wage. So, for some people, some people with higher grade, for example, they might have only 20% of their THP is pensionable using the calculation. For those people you would say the RR would be quite low and adequate. For those who have much higher ratio then might be more adequate. Unfortunately, it is not easy question to answer. Always been difficult to get data at that level to allow you to say it adequate or not. So, it is a data issue.

2. So, it depends on allowances? Because CS in different ministries will have different allowances?

Exactly. We don't really like to see that because we like to see that there is a target RR and people are generally receiving that target RR. It shouldn't be a function of how the allowances change overtime as a share of the total remuneration. But allowances seem to have been going up. This is not the only country where we have seen this. We have seen a lot of countries where rather than change the pay scales they have put allowances in. And those allowances have grown as a share and they are not the subject of pension. So, the government saves money at the pension stage, but it still is able to give significant raises to the people during their careers, but it does not translate always into the pension.

3. Do you think the government should change the salary combination between wage and allowance?

Yes, one of the parametric reforms that we discussed in our report, as you have seen, is to reduce the accrual rate, but increase the ratio of the base wage to the total. So, fold in those allowances to make them part of the pensionable wage base, but reduce the accrual rate, almost to make it neutral. Then what you would then is that everybody is getting the same RR. So that would eliminate that problem, but it is very difficult thing to do, especially if you don't have a data you need. If you were to just reduced the accrual rate for everybody then you will have losers because everybody has a different ratio. So, the answer is yes.

4. Do you think that there are other indicators to measure the adequacy other than replacement ratio?

I guess we would look at some ratio relative to living cost? Generally, in the case of the formal sector worker who has a full career of contributions or full career of service, counted towards

the pension, they generally do not really have a problem of absolute amount of pension. It is really the RR we will focus on for those people.
If you talking about like a social pension, non-contributory pension that is really aims at preventing poverty and that really is addressing a set of different problems then we will focus on the absolute numbers. How that is relative to the poverty line, for example. Or what percentage of income per capita, does that represent consumption per capita. But, in the case of the civil service pension scheme, we really would not focus that much on these absolute measures, we would focus more on RR.

5. **So, how to improve the adequacy but not harm the budget of Indonesia because it is not too high, too low?**

Well, the parametric reforms that we suggested. We suggested a kind of a package. One of the pieces of the package was folding in the allowances to increase the (pensionable) base. So that for some people at least would increase the adequacy. But we also advocated raising the retirement age gradually. And that would also increase adequacy over time because if you have more years of accrual then your RR will be higher when you finally retire.
We also favored having an automatic indexation of pension. That can be lower than what the government does sometimes, but it is much more predictable and it protects the purchasing power of the pension. So, that is why we tend to favor that automatic price indexation. It also avoids a problem where certain cohorts get a better deal than others because during that period may be the government decided to increase the pensions a lot for some reason. But then they didn't increase it for the next cohort for several years and that happened. So, if you make it automatic, then every generation every cohort has the same treatment.
So, these things would increase the adequacy. What the government has been talking about and which is something we see pretty commonly in OECD countries is to have the civil servants join the BPJS (MPP pension scheme) and then in top of that, have an occupational top up scheme. So that would increase the adequacy because the combination of MPP and this top up should be more than what is currently being paid in pension. Now that is quite complicated because they are also now being considered some reforms to the MPP program which would also make it more adequate.
So, if there was to be integration of the younger CS into the MPP scheme, and on top of that, you had another occupational (pension) scheme then almost certainly should become more adequate in the future. But it is very long term. It only affects younger workers. Unless you choose to move everybody very quickly into the MPP scheme and then it can be faster transition.
That is complicated of course if you want to move people who are already in the DB scheme for the CS and move into DB scheme of BPJS scheme. Then you are going to have to account for those years that they participated in the old scheme and then add those to the years of they participated in the new scheme. There were countries to have done this, but it is a complicated reform to do.

6. **Regarding the transformation from CSP scheme to the MPP scheme. CSP system is already stable, but the new one (MPP scheme) is still in progress. What do you think? Is there a sample in other countries that they have a smooth process?**

So, for countries that do this with just the new CS, it is pretty easy. But when you let people or tell people that they should move to the other scheme then we see that it becomes a matter of calculating. How much they have already accummulated in the old scheme and making sure

that is recognized when they retired. That has been done by probably 10-12 countries. I will send one of the papers that we did on this.
There are countries like Chile, Peru, Colombia, even Hungary in one point. Hungary allowed people to choose ”do they want to stay in the old DB scheme or do they want to move to a new DB plus DC?” in the case of Hungary.
In the case of Chile ”do they want to move from old DB to pure a new DC?” and so what happened was people choose to move. In the case of Chile, they calculated a bond, recognition bond and they would place that bond into the individual account, and then when that person retired, that bond would be redeemed. And that bond has a certain interest rate.
Now, what is important I think is to note that people made this as a choice. It was not that they were forced to move. So, the terms of that recognition bond or how their previous service is credited is important. If it is not enough, if people dont find that to be sufficient, they did not have to move. But if they saw that was enough, that when it was added to their new pension, that it would be more than what they were getting before, then they chose to switch. So mostly younger workers switched. I did a paper with Edward Whitehouse on this. I think we covered 7 countries where this choice was given. And you can see the behavior of people was pretty rational. Was mostly the younger people who chose to switch. So, that is possible, but it is more complicated than if you just have the new entrants going in.
We do like the idea of integration. Partly because this brings all the formal sector workers into the same system that makes labor mobility between public and private sector much smooter than it is currently. And recurrently, if you leave your CS job, depending how many years you have been there, you could have a big penalty for joining the private sector.So we like to see portability – the ability to change jobs while keeping benefits earned to that point.
So, you dont have to have an integration completely. Integration like this makes portability makes mobility much easier. If you dont have that, then it is good to have some kind of rules about portability from the public sector scheme to the private sector scheme. Some countries do this well, most countries do not this that well. Filipine is an example that does this well, we have learned.
I want to sit back for one second though, and I should have said something at the very beginning when you were asking about adequacy. We really do and of course the budget constraint that you refered to. We really ideally we look at wage bill and pension reform at the same time. So, the budget has to cover both wages and pensions of the CS. So, from a fiscal point of a view we need to see what are the implications of changes to the wage bill on the pension bill, for example. That is number 1.
Number 2.. Changes to the wage bill will have an immediate effect on changes to the pension. So, both from a fiscal point of a view and from an adequacy, compensation policy point of view, we really ideally would look at both of these things at the same time.
In practice, it is a rare that this is done that way, unfortunately. But that would be our hope and recommendation that you make sure that you’re looking at both of these things, because what you are ultimately doing is look at the total compensation package. So, it is the wages, the pensions, and maybe some other perks that are part of the cost to the government and part of the benefits to the CS. So, we should look at this as a total compensation package approach, but unfortunately it is rarely done that way.

7. So, which is better we choose salary reform first or pension reform?

Ideally, I would want you to do them both at the same time. In fact, the example that we talked about. Of folding in the allowances as part of the pensionable wage that actually is sort of a

wage bill reform that has an impact on your ultimate pension. But if you were, for example, to eliminate the performance bonuses then that would have potentially an impact on the total compensation at this person is looking at. Because the public-private wage differential studies we do, and you have probably seen the World Bank has quite a few of these public-private wage differential studies with the intention to see is the government providing a competitive wage to the public service, to attract good people and different grade levels and different education levels, are they going to attract people? We do a lot of that. Our colleagues in one of our units here on public administration, they do a lot of those studies. But what is not often done or almost never done is including pensions in that calculation. Because every year you are a CS not only are you getting a wage, but you are accruing a service year towards your pension. In a few countries we have done that calculation to see what that translate into a differed wage environment. So, that is why I say the total compensation should be looked at as an what are the incentives for CS to join and to stay there.

8. How about the sustainability of CSP system? Do you think is it underfunded now?

Yes, I think if we calculated the size of the unfunded pension liability of (CSP) it is very high. It is not reported in the fiscal accounts. In fact, I have spoken with some senior CS in Indonesia and some of them also think it should be reported. If we look at how the IMF does fiscal accounting, they recommend taking this into account, maybe within an accrual accounting approach in quantifying this, but only a handful countries in New Zealand and a few other countries actually report this liability. It is a real liability and it is growing and to the extent that it is a burden on future generation, then we should look at that combined with the public debt. So, have in Indonesia rules about deficit limits and debt targets. But they don't take into account this unfunded pension liability which can be very large. So, I think, that it would be good to not accumulate very large unfunded pension liabilities. And that can be done either through reforming the system through parametric reforms, including introducing contribution because as you know (now) there is only a very small contribution . So that is one way. Ultimately, if they do move to the MPP scheme, then they will have joined a partially funded scheme which itself has sustainability issues. They have to raise their contribution rate to be sustainable. And would be an improvement if they were to do that and of course if they were to, as they discussed now, add a DC scheme that would be fully funded and that would be by definition more sustainable.

9. Is it not risk if we change from DB to DC because the investment risk in Indonesia is quite high?

Yes, that is the key question is what are the risks associated with the different types of pension schemes? If they were to move from the current DB to a pure DC, then they would be individual workers would now be assuming all of the investment risk.

What you can do to take care of that, of course, is to have rules about how that money can be invested. What they have done in some countries is they have made it a very conservative investment portfolio, but that results in lower returns and lower returns would result in lower RR. So, if you want to have a target RR that is similar to the DB scheme, but you don't have a lot of risks, then you have to have a much bigger contribution to the scheme. So that's sort of trade off that's involved.

But the case of Indonesia, they go to the other route, which would be to have an integration, then they would be partly in the DB scheme and partly in the DC scheme. So, there the risks would be more diversified.

So, the DB scheme risks have to do with wage growth and sponsor risks, whether the sponsor of the scheme has set it up in a way that is sustainable or as we have seen in so many particularly OECD countries over the years, they have had to cut the benefits because it wasn't sustainable. So that's a separate risk that you run if you have a partially funded or even unfunded DB scheme, then you run the risk of having to cut the benefits at some point to keep the scheme running.
We have also talked about the fact that the capital markets are under development right now. There is very little outside of bonds to invest in, and that is something that if there is other types of reforms, the pensions are can be helpful in helping the capital markets develop. There is a literature on that, but it has to be a coordinated and well-executed set of reforms on both sides. If you only reform the pension scheme and there is no place to invest it, then of course it is not going to be very well.
And the last thing I will mention is the possibility of investing abroad. And this is something we have been talking about even with the MPP scheme, can there be some diversification internationally? And that's not a replacement for reforms in the capital market, but it can help diversify the risk, particularly as the funding grows.
If we look at the case of Malaysia, for example, and their EPF DC scheme. After it grew to a very large size after many decades it was running, they finally did start to diversify. Now they have significant international holdings and that has help maintain good returns for the LUPF in the last 20 years. So, I think, you know, it is something a long-term issue. But, in the short term, facing this trade-off between investment risk and the risk of the sponsor not being able to keep the premises of the DB scheme. And wo what is the best balance between those 2 things? I think this hybrid approach is probably one that we probably favor. It also brings with it the benefits of integration with the MPP scheme. So, that might be a good place to balance the two types of risks.

10. Do you think Indonesia can afford to reform the current CSP system from DB to DC?
I think if it was to be applied only for a new CS, then it is very easy to afford. The cost will grow over time, but we are expecting and hoping that Indonesia would grow quite fast. As long as it manages its overall fiscal policy responsibility and doesn't also expand the size of the government budget dramatically, then it should be affordable, even in the longer term. And, of course, the government has this double burden of transition where it has to pay both the old pensions that came out of the DB scheme and the contributions to the DC scheme as the employer. So, at some point that will become a challenge around may be 25-30 years from now. That will become the highest point of the sum of the two costs, may be earlier, and then it will start to fall. And so in the very long run, it will save the government money.
So, I think it's a sensible idea. Now, if they were to move the existing CS over or as has been discussed, they want to add a DC component even for the existing CS, then that would obviously be a more immediate cost. Whether they can afford that depends on other spending? It depends on what else they are doing with the budget, particularly with the wage bill. Because we have heard a lot of discussions about changes that could increase the cost of the wages quite substantially. So, this is a good example where you have to look at both of these things.

11. I think if the current CS migrate to DC; the transition cost will be high. It needs higher contribution rate, may be more than 20%. What do you think?
I think that our calculations were consistent with a 20% contribution rate if you want to have a conservative investment portfolio. So, the more conservative your investments, the higher the

contribution rate you need. There is one very important factor which we try to show, we do these simulations. Show the impact of the retirement age. If the retirement age remains where it is, around 58, then you require much higher contribution. If it gradually rises over time to 65 the way that MPP scheme is scheduled to rise, then you can have a lower contribution rate and still reach the same target RR because as you know, in DC scheme, the accumulated balance will be higher and the annuity will be shorter and cheaper.
So, we really see that, even if we were not talking about DC scheme or any other reform, we would also thinking about raising retirement age over time, gradually, and really it would make sense for the two schemes to have the same retirement age in the long run. If mean, if anything, Indonesian CS on average should live longer than other worker, and they are covered by the schemes.
So, 1. there is no real justification for not having the same retirement age.
2. Life expectancy has been increasing and will is expected to continue to increase. So that, the retirement duration has been going up. I don't know, maybe how many years has the retirement age been set at this level? 70-75 years?
So, it is just a matter of time before it has to rise. So, if you build that into the reform, then it makes it more affordable because on the pension side. On the wage side, it is different calculation. But, you can have a lower contribution rate with the same target RR if the retirement age is going up over time.

12. But if we increase the retirement age, how about the productivity of the CS? Do you have the data?

It is a good question and I don't have data on productivity by age of CS in different countries. But what I would say is that this is we are talking about a very gradual change. So, what 58 years old looks like today, 20 years from now may be different in Indonesia and everywhere. So, this is a very gradual change. I think in the case of MPP, it is going up to 65 by 2043. That's pretty fast and given that it started quite low. But we are now in 2024. 20 years from now, if it were to go up around to that level, I think it would be okay in terms of productivity of workers. I think you have more fundamental issues about productivity workers in terms of the relationship with technology that will emerge.

You know that the productivity of the current old CS especially in the local government are not good. That's why it is good for productivity or not?

Yeah, I think it does would have a gradual increase for many reasons. But you know, as people have longer, healthy lifespans, you should naturally have people able to work longer at the same level of productivity.

13. Comeback to the DB to DC. As I know, In Hungary, in 2008 they moved from DB to DC, but then they came back again to DB. What is the problem of that?

I think there are a couple things going on here. When President Orban was in the parliament as an opposition that voted against the reform in 1997. He never like this reform to begin with. When he took over, he started making changes that were making the scheme worse. And he was making the DB scheme more generous. He would give an extra Christmas payment for the DB scheme, and he would not allow the contribution rate to go up for the DC scheme. He was already finding ways to make a DC scheme less attractive. Finally, what he decided was they had accumulated a lot of money and may be 9% of GDP in mostly the government bonds. So, he decided that he would give people a choice to come back to the old DB scheme, or stay in the DC scheme, but lose any benefit from the DB scheme. So, which was really not a choice

because most of the benefit was still coming from the DB scheme. So, if you lost the DB scheme, you really had very little from the DC scheme.
So, pretty much everybody chose to move back. A small group of people that were very stubborn stayed in the DC scheme, but the rest, everybody moved back. But it was because they were going to lose so much in their benefits. So, Orban was able to do was he took all of the assets that had been accumulated. And that helped him reduce the public debt by significant amount, and that helped him stay below the maastricht criteria level of 60% of GDP. And then he could have room to spend the money on other things, including higher pension. So, what he actually had done was moved from a situation where we had assets that were backing pension promises to the old situation, which was just a bigger unfunded pension liability with no assets to be used for, for that purpose.
So, I think it was fiscally motivated to a large extent. And partly ideological. And I would say that the private sector schemes were not among the best administers of this scheme. How much of one would have to study that closely to see how much of that was a problem of the industry? How much of the problem was it, the fact that the regulations were such that you essentially had to invest in government bonds? So, that is more complicated, but there have been several reversals in Eastern Europe besides Hungary. Poland also had a significant reversal. Really, I think this has a lot to do with fiscal pressure, that it is just easier to run unfunded pension liability that doesn't show up on your fiscal accounts than it is to pay that double burden of transition for some years.
And 2008 in particular was a year that saw a lot of the DC schemes being questioned because they had negative returns because of the financial crisis in 2008. So, when people saw negative returns that really hurt the image, but of course that is normal. You expect in a 30-year periods, you are going to have some periods of negative returns, but they should be balanced out in the long run. But these are young schemes. May be some of them only 10-15 years old. So, nobody had that experienced with such a negative return. So there had been some reversals, I think it is partly been because people were worried about this negative return. Partly because the government really found it much easier not to have to pay old pensions and new contributions, fiscally.

14. Back to Indonesia. About Notional DC, which is better NDC or DC for Indonesia?
Well, I think the NDC approach has some advantages in terms of the link between the contributions and the benefits, the incentives, and the automatic increase of the retirement age, because the way it works is that you accummulate this notional balance and then convert it into an annuity, and that annuity is converted based on the life expectancy at that time in the future. So, in a way it is an automatic adjustment taking place. On the other side, it is not really addressing the sustainability problem, the fundamental sustainability problem of continuing to have and let grow your unfunded pension liability. If you have a funded DC scheme then you are limiting the size of unfunded liability, and that is not happening with the NDC. So, to answer your question I think it would depend on a couple of things:

1. Can you find the savings to build up this fund to offset the cost of the pension? If you can then from a macro point of view, increasing national savings would be a good thing if you are in a position to do that. It is the same reason that you have placed deficit limits on the government. You dont want the government to spend so much to consume so much that you have a low national savings rate, which will then limit future economic growth. If you can do that, it is good.

If you are already a mature, high coverage DB scheme with big unfunded liabilities already like most of the European countries, then it is very hard to start from zero. And you know, start a new DC scheme and pay the full transition. It is possible, but it would require a lot more fiscal sacrifice.

2. I would point out, which is more technical issue. NDC scheme have to be linked to some kind of interest rate. It can be wage bill growth, wage growth, average wage growth. The problem, in a country like Sweden or Italy, these are very stable numbers. But in the case of Indonesia, they change suddenly for reasons that have nothing to do with the way the pension scheme is designed. For example, if tomorrow you decided to change. Make a change in the hiring practices. Like right now, Indonesia is bringing 2.4 millions workers are being converted into CS from being contract workers.

Those people, I imagined, have lower than average salaries. If you were basing your notional interest rate on the average salary, then there is going to be this sudden change, that has nothing to do with the pension scheme, but which will affect the notional interest rate of workers. And for the MPP scheme, for example, if you were to expand coverage of MPP to Small firms tomorrow, then again you will have an artificial change in the average wage or wage bill, which is volatile. It's which it's going to change people's pension, but not for the reasons that the NDC scheme was set up to do. It's much more effective if everybody's already covered. And growth is stable. And, it's a very calm situation. Then the notional accounts perform, I think, better. Now, civil service, if the way that the wage bill is handled in the future is stable, then you can avoid this problem. But that may not be the case. So, the big reason is, a savings story whether you choose funded or NDC, but that smaller technical reason is this need to find a way to make sure that that interest rate you could use, for example, GDP growth. I've suggested it in some cases because GDP growth will be less susceptible to this kind of changes. Italy actually uses a moving average. Last I checked they use a moving average of GDP growth. That should be more stable than wage bill growth or average wage growth in particularly in a developing country where, you know, there's a lot of a lot of things are moving. Coverage is moving. Policy can move the change these numbers quite a bit.

15. Do you think this is the reason why now Indonesia has not reform the CSP because there are so many things to think about?

Well, I'm hoping that they're going to. I think that they've done a lot of planning and thinking about this. They know the options. I think they know the costs. I think it's just a matter of whether it's a policy priority right now for this new administration. But I'm hopeful that they will actually move ahead with this reform, the average pension reform, you know, I forget which, which study looked at this, but it really seems to take about seven years on average from the starting to think about it, to actually doing it. It takes quite a long time. And, in Indonesia, even the BPJS, the SJSN legislation is passed before the implement. So, it took a long time to implement it.

16. Ministry of Finance said that the our CS pension system is quite good, the expense not to high compare to GDP (below 10 percent) what do you think?

The spending of CSP scheme is not higher than other countries in the region. It is probably going to be increasing because of demographics. But it is not extremely high. But as percentage of its of government revenue it is quite significant. You could argue that the problem is really Indonesia in particular, is a revenue side problem that Indonesia collects less taxes than other countries at the same income level. They could improve quite a bit on the revenue side. So, as

a percentage of GDP, it is not an outlier, but as a percentage of revenue, it is pretty significant. I would look at the revenues as the denominator. And it's crowding out other things. Right.
And compare to the CS budget, it also around 33 percent. If I'm not wrong.
That's quite a bit. I didn't know that figure. But, that's quite a lot.

17. How to make a balance between adequacy and sustainability? Both good at the same time.

Well, I think that of the various reforms that have been that are being discussed and that we wrote about the different options, I think the one that seems to have the most advantages is an integration of new CS with MPP, maybe even younger civil servants who can discuss that. So, integration with MPP and a top up DC scheme on top of that. That would and by the way then the MPP scheme reforms need to be followed through. So, if you were to reform MPP and integrate civil servants into MPP and add a top up occupational pension for the civil servants, I think that would be give you adequacy and sustainability. And also, the benefits of labor mobility between public and private sector. That would be, I think, useful for the country in the future. It's not so much moving out in and out now, I suppose. I'm sure. But in the future, we would expect if the policy is done well, then you should have people that want to move back and forth from public and private sector. Not necessarily just join the public sector and stay there until they retire. So, I think that that would probably be the scenario that had the most advantages in terms of both sustainability and adequacy

18. Which is better between parametric or systemic reform?

It is both a systemic and parametric reform because if you do send the CS into the MPP scheme. You have done both the parametric and the systemic reform at the same time. And the MPP scheme reforms that we've been talking about like increasing the contribution rate from 3% gradually. That is also a parametric reform and is necessary to make sure that MPP is sustainable in the long run. So it's a combination of parametric and systemic reforms. But yes, not sort of a partial just parametric separate reform which can still be useful but would not in our view. I think my view is not the best solution. But as you can see, there are a lot of moving parts. So, it would be quite complicated this whole reform. I'm not sure how many people understand it.

Appendix 9: Ethical Clearance Approval on Studies and Humanities Research from National Research and Innovation Agency

KOMISI ETIK BIDANG SOSIAL HUMANIORA
BADAN RISET DAN INOVASI NASIONAL

ETHICAL COMMITTEE ON SOCIAL STUDIES AND HUMANITIES- NATIONAL RESEARCH AND INNOVATION AGENCY
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Website: https://klirensetik.brin.go.id/, Email: klirensetik@brin.go.id

PERSETUJUAN KLIRENS ETIK RISET SOSIAL HUMANIORA
ETHICAL CLEARANCE APPROVAL ON SOCIAL STUDIES AND HUMANITIES RESEARCH

No: 213/ KE.01/SK/03/2024

Komisi Etik Bidang Sosial Humaniora BRIN menerangkan bahwa,
Herewith The Ethics Committee on Social Studies and Humanities National Research and Innovation Agency (NRIA) informs that,

Judul Penelitian *Research Title*	:	Adequacy of Pension System: Qualitative Interview of Indonesian Civil Service Pensioners in Kapuas Regency
Nomor Usulan *Application Number*	:	12022024000043
Unit/Lembaga *Unit/Institution*	:	Hungarian University of Agriculture and Life Sciences, Hungary
Koordinator Periset *Research Coordinator*	:	Abdul Hadi

Telah disidangkan pada tanggal 6 Maret 2024.
Has been evaluated in the meeting on March 6th, 2024.

Berdasarkan hasil sidang tersebut, Komisi Etik Bidang Sosial Humaniora BRIN memutuskan: **Riset dengan Nomor Usulan di atas telah memenuhi persyaratan Klirens Etik dengan jangka waktu riset dari bulan Maret s.d Desember 2024.**
Based on the results of the meeting, the Ethics Committee on Social Studies and Humanities NRIA has made the decision: ***The research with the application number has met the ethical clearance requirements with a period of research from March to December 2024.***

Periset tetap berkewajiban untuk:
Researchers remain obligated to:

a. Mematuhi protokol kesehatan terkait Pandemi Covid-19 yang berlaku di lokasi riset;
   Comply with health protocols related to Covid-19 Pandemic that apply at the research locations;
b. Mengajukan permohonan baru apabila ada amandemen rancangan atau subyek riset;
   Submit a new application shall there be amendment to research design or research subject;
c. Memberikan laporan apabila riset Lapangan telah selesai; dan
   Submit a report when the field research has been completed; and
d. Memberikan informasi bila ada perubahan lokasi, waktu riset dan/atau dihentikan sebelum waktunya.
   Provide information if there is a change in location, research time and/or termination ahead of schedule.

Komisi Etik Bidang Sosial Humaniora BRIN mempunyai hak untuk melakukan pemantauan selama riset berlangsung.
The Ethical Committee on Social Studies and Humanities NRIA has the right to conduct monitoring during the research.

Jakarta, *13th of March 2024*
Ketua Komisi Etik Bidang Sosial Humanira BRIN,
Chief of Ethical Committee on Social Studies and Humanities NRIA

TT ELEKTRONIK

Dr. Augustina Situmorang, M.A.

Appendix 10: Interview Letter to the Director General of Budget, Ministry of Finance of the Republic of Indonesia

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

Subject: **Interview Letter**

To the Honorable,
Director General of Budget,
Ministry of Finance of the Republic of Indonesia

Herewith, **the Doctoral School of Economics and Regional Sciences at the Hungarian University of Agriculture and Life Sciences** submitted a request for an interview as supporting data in writing a dissertation entitled "**Pension Reform in Indonesia: The Strategy to Reduce Pension Liabilities**," which one of our students, **Abdul Hadi**, is working on. This dissertation passed a comprehensive research design seminar, and the doctoral school examiners accepted it.

Thank you for your cooperation and kind attention.

Budapest, June 06, 2024
Sincerely,
Head of the Doctoral School

Prof. Dr. Zoltán BUJDOSÓ

Appendix 11: Interview Letter to the Lead Economist of the World Bank

HUNGARIAN UNIVERSITY OF
AGRICULTURE AND LIFE SCIENCES

Subject: **Interview Letter**

To the Honorable,
Mr. Robert Palacios
The Lead Economist at the World Bank

Herewith, **the Doctoral School of Economics and Regional Sciences at the Hungarian University of Agriculture and Life Sciences** submitted a request for an interview as supporting data in writing a dissertation entitled "**Pension Reform in Indonesia: The Strategy to Reduce Pension Liabilities**," which one of our students, **Abdul Hadi**, is working on. This dissertation passed a comprehensive research design seminar, and the doctoral school examiners accepted it.

Thank you for your cooperation and kind attention.

Budapest, June 10, 2024
Sincerely,
Head of the Doctoral School

Prof. Dr. Zoltán BUJDOSÓ

Appendix 12: Request Letter for Civil Servants Data to the NCSA of the Republic of Indonesia

Kepada Yth	:	Deputi Bidang Sistem Informasi Kepegawaian Badan Kepegawaian Negara (BKN)
Perihal	:	Permintaan Data Pegawai Negeri Sipil (PNS) dan Pensiunan PNS dalam rangka Penyusunan Penulisan Ilmiah di Jurnal Internasional dan Penyusunan Disertasi Doktoral tentang Sistem Pensiun PNS berjudul *Pension Reform in Indonesia: The Strategy to Reduce Pension Liabilities*
Tanggal	:	6 Oktober 2023

1. Sehubungan dengan penyusunan penulisan ilmiah di jurnal internasional dan penyusunan disertasi doktoral tentang sistem pensiun PNS berjudul *Pension Reform in Indonesia: the Strategy to Reduce Pension Liabilities* yang didalamnya terdapat proses analisis/simulasi anggaran (fiskal), sehingga kami membutuhkan data PNS dan Pensiunan PNS terbaru (keadaan per 1 Oktober 2023).
2. Adapun rincian data PNS yang dibutuhkan untuk proses analisis/simulasi adalah sebagai berikut:
   a. PNS Pusat dan Daerah dirinci menurut golongan ruang dan masa kerja (contoh formulir I).
   b. Pensiunan PNS Pusat dan Daerah dirinci menurut jenis kepegawaian, golongan ruang dan jenis pensiun (contoh formulir II).
   c. Perkiraan PNS Pusat dan Daerah yang mencapai BUP dirinci menurut jenis kepegawaian, golongan ruang dan tahun pensiun (contoh formulir III).
3. Mengingat data tersebut sangat penting untuk digunakan, mohon kami dapat menerima data tersebut dalam waktu yang tidak terlalu lama.
4. Demikian kami sampaikan, atas perhatian dan kerjasamanya diucapkan terima kasih.

Mahasiswa Doktoral,

Abdul Hadi, S.Sos, MPA
NIP. 19810621 200912 1 001

Tembusan, disampaikan Kepada Yth:
1. Deputi Bidang Pembinaan Manajemen Kepegawaian BKN;
2. Biro Sumber Daya Manusia BKN;
3. Pembimbing Disertasi: Dr. Emese Bruder.

Appendix 13: Request Letter for Civil Service Pensioners Data to PT Taspen

PT TASPEN (PERSERO)
Jl.Letjen Suprapto Cempaka Putih, Jakarta 10520
Telp. (021) 4241808, Faksimile.(021) 4203809
Homepage : www.taspen.com E-mail : taspen@taspen.com

FORMULIR PERMOHONAN INFORMASI

No. Pendaftaran (*diisi petugas*)*: .....

Nama	:	Abdul Hadi
Alamat	:	Permata Depok Berlian I Blok G3/19 RT 08/07 kelurahan Pondok Jaya Kecamatan Cipayung, Depok, Jawa Barat
Pekerjaan	:	PNS / Mahasiswa doktoral bidang ekonomi pada Hungarian University of Agriculture and Life Sciences, Hungaria
Nomor Telepon/E-mail	:	082213080558. Email: hadiabdul02@gmail.com
Rincian Informasi yang dibutuhkan (tambahkan kertas bila perlu)	:	1. Laporan keuangan PT Taspen tahun 2021-2023 2. Data Jumlah Pensiunan PNS dan Pembayaran Pensiun Berdasarkan Golongan Ruang Posisi Juni 2024 (contoh terlampir) 3. Survei Pensiunan PNS di Kantor PT Taspen Yogyakarta
Tujuan Penggunaan Informasi	:	Penyusunan disertasi doktoral tentang sistem pensiun PNS
Cara Memperoleh Informasi**	:	1. [X] Melihat/membaca/mendengarkan/mencatat (*** 2. [X] Mendapatkan salinan informasi (hardcopy/softcopy)***
Cara mendapatkan salinan informasi**	:	1. [X] Mengambil langsung 2. [ ] Kurir 3. [ ] Pos 4. [ ] Faksimili 5. [X] E-mail

Depok, 24 Juli 2024

Petugas Pelayanan Informasi (Penerima Permohonan)	Pemohon Informasi
(.....)	(Abdul Hadi, S.Sos, MPA)
Nama dan Tanda Tangan	Nama dan Tanda Tangan

Keterangan :

* Diisi oleh Petugas berdasarkan nomor registrasi permohonan informasi publik

** Pilih salah satu dengan memberi tanda (V)

*** Coret yang tidak perlu