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The Effect of Asset Allocation on Financial Performance Pension Fund: An analysis in Indonesia

Yana Triyana[1*], Harjum Muharam[2]

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Abstract

The research aims to test the influence of 4 (four) asset classes: Time Deposits, Government Securities, Shares, and Corporate Bonds on the financial performance of Pension Funds in Indonesia. The research uses secondary data from OJK data with a quantitative type, which is related to the parameters of 4 asset classes: Time Deposits, Government Securities, Shares, and Corporate Bonds, as well as ROI data. The quantitative data that will be studied is annual periodic data sourced from financial reports from 31 December 2018 to 31 December 2022 or for five years. Research Results ShowInvestment in Time Deposits has a negative and significant influence on Return On Investment in Pension Funds in Indonesia, Investment in Government Securities has a positive and considerable influence on Return On Investment in Pension Funds in Indonesia, Investment in Shares has a negative and significant influence on Return On Investment in Pension Funds in Indonesia, shares increase, there will be a decrease in the level of Return on Investment, and statistically this has a significant influence. Investment in Corporate Bonds positively and significantly influences the Return On Investment of Pension Funds in Indonesia. If tested together, the results are investment in time deposits, investment in government securities, investment in shares, and investment in corporate bonds. Has the same positive and significant effect on Return On Investment in Pension Funds in Indonesia for the 2018-2022.

1. Introduction

The need for sustainable income and income in old age has become a desire and hope for every worker in all countries, including Indonesia. However, workers' readiness to prepare for retirement

[1-2] *Universitas Diponegoro, Semarang, Indonesia, Email:*[1] *yanatriyana@students.undip.ac.id*

is still relatively low. In line with Future of Retirement research from HSBC Global, it shows that of a total of 1,050 respondents in Indonesia, around 68% of the total respondents expect a comfortable and peaceful retirement, and only around 30% of the total respondents have prepared for retirement by setting aside their income (HSBC, 2019).

The reluctance of workers to prepare Pension Funds can be influenced by various factors, including whether it is due to the low level of recognition/understanding of Pension Funds or whether the existence of Pension Funds is unknown to workers. A survey from OJK shows that the level of understanding of Pension Funds is 30.46% while the level of inclusion of Pension Funds is 5.42%(OJK, 2022). This shows that the level of literacy and inclusion in Pension Funds is still very low.

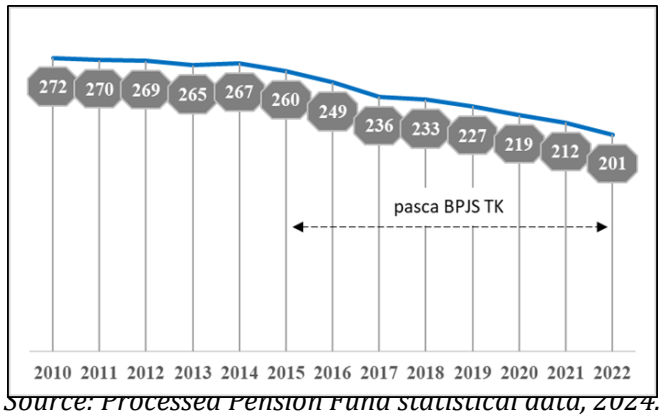
Pension funds have a strategic role, especially in sustainable income management programs in retirement for their participants. There are 2 (two) challenges that are currently considered quite big for the Pension Fund in managing its program, namely 1) the continued existence of the institutional existence of a national scope employer pension program and 2) the ability of going concern management of the pension program towards the growth of the assets it manages while still paying attention to regulatory support, strengthening governance, and effective implementation of risk management.

Until 2022, the number of Pension Funds still running is 201 Pension Funds (Employer Pension Funds and Financial Institution Pension Funds). In its development, the Pension Fund, which is a voluntary pension program, continues to experience decline every year. One of the main factors is the problem of the financial performance of the Pension Fund which causes the employer's burden to increase/swell. On the other hand, the presence of the Employment Social Security Administering Agency (BPJS TK) as a mandatory pension program is allegedly one of the reasons why employers decide not to continue managing the Pension Fund.

The publication of the national social security system law in 2004 and the law on social security administering bodies in 2011, had a significant impact on changes to the Pension Fund management system. These laws introduced significant changes, including the potential for double funding for employers who already have or include their employees in the Pension Fund. This information is crucial for all stakeholders in the pension fund industry to understand the regulatory landscape.

Until 2022, the total Pension Fund will continue to decline yearly. The decline has become more intense since the implementation of the mandatory pension program by BPJS TK became effective in mid-2015. The development of the number of Pension Funds from 2010 to 2022 is:

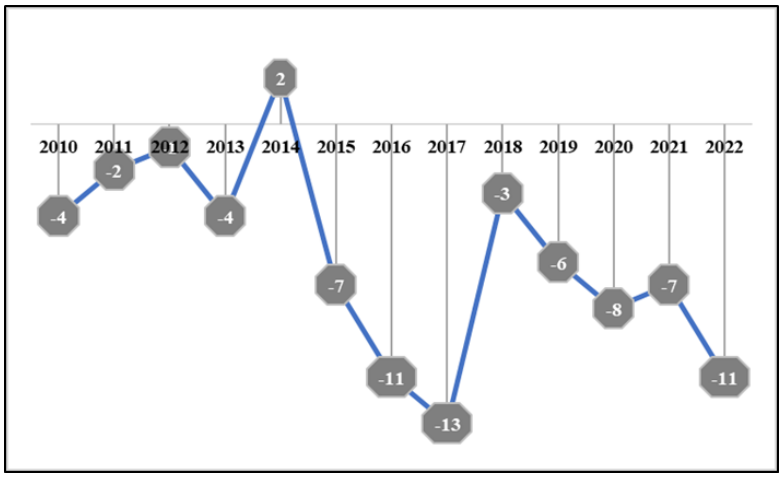
Graph 1. Development of Pension Fund Players 2010 to 2022



Source: Processed Pension Fund statistical data, 2024.

The development of the number of increases and decreases in Pension Fund players from 2010 to 2022 is as follows:

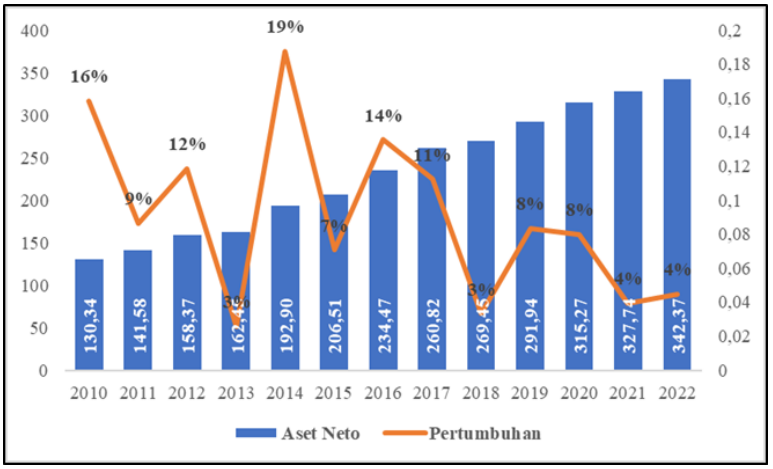
Graph 2.
Increase/Decrease in Pension Fund Players
2010 to 2022



Source: Processed Pension Fund statistical data, 2024
Graph 2.

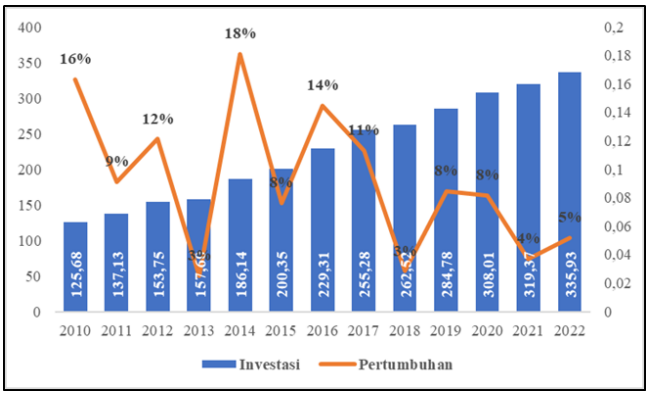
Above shows that since the management of the mandatory pension program has become effective, the number of Pension Funds disbanding has increased. The average decrease in the number of Pension Funds before the implementation of BPJS TK was 2 Pension Funds. Meanwhile, since BPJS TK became effective, the average decrease has been 8 Pension Funds. The highest number occurred in 2017, with a decrease of 13 Pension Funds. BPJS TK's presence also indirectly influences Pension Fund assets' development.

Graph 3.
Development Pension Fund Net Assets
2010 to 2022



Shows that total Pension Fund Net Assets have generally increased. However, this increase tends to decrease relatively in the last 13 (thirteen) years. The increase in total Net Assets of Pension Funds since BPJS TK became effective has been less than 10%, an average of around 8% per year. Pension Fund Net Assets are not only supported by contributions from employers or participants but are also obtained from the results of investment development. Therefore, investment is one of the leading asset components in the administration of Pension Funds. The following is the development of the Pension Fund investment portfolio from 2010 to 2022:

Graph 4.
Portfolio Development Investment Pension fund
2010 to 2022



Source: Processed Pension Fund statistical data, 2024 Based on graph 4.

Pension Fund investment growth is almost in line with the development of Pension Fund net assets. Pension Fund investments tend to increase, but growth is relatively decreasing.In the period 2010 to 2022, the average ratio of investment to net assets was 97%. If viewed based on investment type, the composition of the Pension Fund investment portfolio includes capital market, money market, and other instruments. The development of the composition of the Pension Fund investment portfolio from 2010 to 2022 is shown in Graph 5 below.

Graph 5.
Development of Portfolio Composition Investment Pension fund
2010 to 2022



Source: Processed Pension Fund statistical data, 2024 Based on Graph 5.

The Pension Fund investment portfolio is generally dominated by investments in capital market instruments every year, with a decreasing trend in the last 13 (thirteen) years. 2010 had the highest placement of capital market instruments (70.87%), and 2014 had the lowest (59.94%). Pension funds expect a greater return on investment in capital market instruments even though the investment risk is higher. The reduction in investment in capital market instruments is part of the Pension Fund's strategy to diversify investment risk through placement in money market instruments. The investment placement in capital market instruments includes SBN, Bonds, Shares, and Mutual Funds. Meanwhile, money market instruments include savings, time deposits, deposits on call, and certificates of deposit. The composition of the Pension Fund investment portfolio in 2022 is as in Table 1 below.

Table 1.
Pension Fund Investment Portfolio Composition
Year 2022

Investment Type	Weight (%)	Investment Value	Net Investment Income
Savings	0.09%	295.439.051.177	26,321,868,046
Deposits on call	0.49%	1,620,340,831,698	26,410,189,194
Time deposit	26.21%	87.417.574.359.262	2,871,130,746,152
Certificate of Deposit	0.05%	165,162,608,005	1,867,297,886
Bank Indonesia Securities	0.00%	-	-
Government Securities	32.63%	108.822.595.962.704	5,110,767,025,748
Share	8.60%	28,665,145,286,638	2,659,062,122,779
Corporate Bonds	17.80%	59,348,110,658,546	4,436,162,491,934
Corporate Sukuk	1.67%	5,582,274,106,287	392.855.379.396
Regional Bonds/Sukuk	0.00%	-	6,809,606,598
Mutual Funds	4.11%	13,714,350,786,101	6,556,187,022
MTN	0.06%	188,000,000,000	12,274,767,989
Asset Backed Securities	0.17%	556.194.294.043	30,609,020,087
DIRE-KIK	0.00%	4,098,919,167	7,811,146,533
DIFRA-KIK	0.02%	74,470,661,085	2,087,609,336
Options contracts and securities futures contracts	0.00%	-	-
REPO	0.00%	-	-
Direct participation	3.44%	11,472,809,361,728	778.996.364.672
Land	1.01%	3,361,507,352,697	- 1,517,378,321,265
Building	0.49%	1,643,508,290,767	75,328,168,587
Land and Buildings	3.17%	10.575.170.507.022	2,843,904,102,898
Total(for 192 Pension Funds)		333,506,753,036,926	17,771,575,773,593

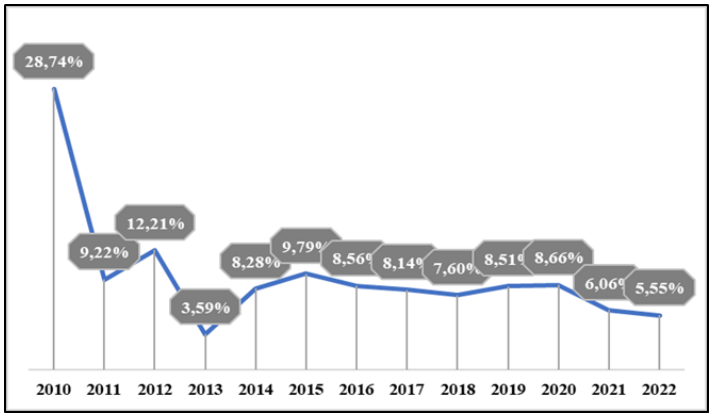
Source: Recapitulation data of processed Pension Fund financial reports, 2024

Based on Table 1. above, it shows that the Pension Fund investment portfolio in 2022 is dominated by Government Securities investment, around 32.63% of the total investment. Other types of investment in the most significant group are Time Deposits (26.21%), Corporate Bonds (17.80%), and Shares (8.60%). The dominance of these investments is also in line with the income from each type of investment. Where the most significant investment income is sequentially from Government

Securities, Corporate Bonds, Deposits and Shares. In addition, there is a relatively large investment income from land and building investments.

The rate of return on investment (Return on Investment/ROI) is one measure of Pension Fund investment performance. The greater the ROI achieved, the better the pension fund's investment performance. ROI is calculated to assess the size of a profit obtained from the investment management that has been carried out. Based on OJK data, the ROI of Pension Funds in 2022 will be 5.55%, decreasing by around 8.42% yoy. The development of Pension Fund ROI from 2010 to 2022 is as follows:

Graph 6.
Development of Pension Fund ROI
2010 to 2022



Source: Processed Pension Fund statistical data, 2024

Based on Graph 6, the development of Pension Fund ROI generally fluctuates every year with a downward trend in the last 13 (thirteen) years. 2010 was the highest ROI (28.74%), and 2013 was the lowest (3.59%). The decline in ROI in 2013 was due to the decrease in the performance of the Indonesian capital market. The Composite Stock Price Index (IHSG) was very volatile throughout 2013. This resulted in the leading stock index falling more deeply than the IHSG. The decline in ROI in Pension Funds is very interesting to carry out research, considering that the level of ROI measures the success of administrators in managing Pension Funds. Of the several parameters or indicators that will be used as research objects in the form of asset allocation in both capital market and money market instruments, especially in 4 (four) asset classes consisting of Government Securities, Shares, Corporate Bonds, and Deposits.

Several studies have been carried out on the influence of investment asset allocation on financial performance, but there are still differences in the research results. The relationship between asset allocation and fund performance of occupational pension schemes in Kenya accounts for 57.35% of fund performance(Wanjohi and Wang'ombe Kariuki, 2019). The impact of portfolio asset allocation on the financial performance of Pension Funds in Kenya accounts for 58% of fund performance(Kiplagat, 2014). The impact of portfolio asset allocation on the financial performance of Pension Funds in Kenya accounts for 82.7% of fund performance(Muia, 2015). The relationship between asset allocation and financial performance of Pension Funds in Kenya accounts for only 28% of fund performance(Omondi, 2013). The impact of portfolio asset allocation on the financial performance of Pension Funds in Kenya accounts for 89.5% of fund performance(Ndung'u, 2016). In the relationship between asset allocation restrictions and Pension Fund performance in South Africa, there is a negative linear correlation between asset allocation restrictions and Pension Fund

performance(Mhanda, 2020). The investment portfolio of the University of Muhammadiyah Malang (UMM) Pension Fund has not yet optimized its investment activities because it is still very conservative and very careful and avoids high-risk investments.(Satiti, 2013).

Based on previous research regarding asset allocation in Deposits, Government Securities, Shares and Corporate Bonds, it shows that there are still differences in results regarding the relationship/correlation between Pension Funds and financial performance. Several studies state that investment in deposits, government securities, shares and corporate bonds has a positive correlation with company performance.

In this research, the focus is on Pension Funds in Indonesia because research related to the influence of asset allocation on the financial performance of Pension Funds is still rarely conducted in Indonesia. Based on the background of the problem explained above, the researcher gave the title: "Analysis of the Effect of Asset Allocation on the Financial Performance of Pension Funds in Indonesia".

2. Methods

The research uses secondary data from OJK data with a quantitative type, which is related to the parameters of 4 asset classes: Time Deposits, Government Securities, Shares and Corporate Bonds as well as ROI data. The quantitative data that will be examined is annual periodic data sourced from financial reports as of 31 December 2018 to 31 December 2022 or for 5 years. Population includes objects or subjects of quality and character from which conclusions can be drawn. A sample is part of a population taken from its number and characteristis (Sugiyono, 2013).

The data used in this research is secondary data. The data collection method used is Statistical Dataset. This method is used because the required data is already available. Data on 4 asset classes including: Time Deposits, Government Securities, Shares and Corporate Bonds as well as Pension Fund ROI were obtained internally from OJK.

3. Results and Discussion

Panel Data Regression Hypothesis Testing

Determination Coefficient (R2)

The coefficient of determination (R2) essentially measures the model's ability to explain the dependent variable. An R (R square) value that is close to one means that the independent variable provides almost all the information needed to predict variations in the dependent variable. In connection with this, the results of calculating the coefficient of determination are presented in the following table:

Table 2.
Determination Coefficient (R2)

R-squared	**0.162322**
Adjusted R-squared	**0.155567**

Source: Eviews data processing, 2024

Based on the calculation results in table 2 above, it can be seen that the influence of the independent variable on the dependent variable Return on Investment for Pension Funds in

Indonesia can be seen from the adjusted r-squared value, namely 0.155567 or 15.5567%. This indicates that 15.5567% of Return On Investment can be explained by variations in all independent variables, namely investment in Time Deposits, investment in Government Securities, investment in Shares and investment in Corporate Bonds. Meanwhile, the remaining 100% - 15.5567% = 84.4433% is explained by other independent variables that were not studied.

F Test

The F statistical test basically shows whether all the independent variables included in the model have a joint influence on the dependent variable. The following are the results of the F Test:

Table 3.
F Test Results

F-Statistics	24.02824
Prob(F-Statistic)	0.000000

Source: Eviews data processing, 2024

The results of the simultaneous significant test can be seen in Table 3. The F test was carried out to determine the effect of investment variables in Time Deposits, investment in Government Securities, investment in Shares and investment in Corporate Bonds on Return On Investment simultaneously. Sig value. of 0.000000 indicates that for an alpha significance level of 0.05 two tailed is definitely significant. Meanwhile, testing with the F test is by comparing the Ftable and Fcount values. The Fcount value is 24.02824, Ftable is 2.3897 (see Table F), thus the results obtained are Fcount (24.02824) > Ftable (2.3897), so the hypothesis is accepted.

It can be concluded that investment in Time Deposits, investment in Government Securities, investment in Shares and investment in Corporate Bonds simultaneously influence Return On Investment in Pension Funds in Indonesia in 2018-2022.

T Test

The t test basically shows how far an independent variable partially influences the dependent variable included in the model. The following are the results of the t test:

Table 4. T Test Results

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	0.004351	0.013139	0.331162	0.7407
Time deposit	-0.002295	0.000657	-3.490241	0.0005
Government Securities	0.002307	0.000830	2.780098	0.0056
Share	-0.004976	0.000593	-8.386830	0.0000
Corporate Bonds	0.006957	0.001238	5.618072	0.0000

Source: Eviews data processing, 2024

From the results of the model estimation, a hypothesis test was carried out in accordance with the objectives of this research. A t test was carried out to determine the effect of investment variables in Time Deposits, investment in Government Securities, investment in Shares, investment in Corporate Bonds and on Return On Investment in Pension Funds in Indonesia partially (individually).

The t test is carried out by comparing the calculated t value with the t table. If tcount> ttable, then the effect is said to be significant, and if tcount<ttable, then the effect is said to be not significant. The results of hypothesis testing can be described below:

Hypothesis 1

H1: Investment in Time Deposits has a positive effect on the ROI of Pension Funds in Indonesia

Based on the t test at α = 5% in table 4, the probability value of the investment variable in Time Deposits is 0.0005 or less than 0.05, so it can be concluded that investment in Time Deposits has a significant effect on Return On Investment. If you look at the t table value at alpha 0.05 (one tail) is 1.9647, while the calculated t value is -3.490241 (negative), then H1 is rejected. Thus, it can be concluded that investment in Time Deposits has a negative and significant effect on Return On Investment in Pension Funds in Indonesia in 2018-2022.

Hypothesis 2

H2 : Investment in Government Securities has a positive effect on the ROI of Pension Funds in Indonesia

Based on the t test at α = 5% in table 4.13, the probability value of the investment variable in Government Securities is 0.0056 or less than 0.05, so it can be concluded that investment in Government Securities has a significant effect on Return On Investment. If you look at the t table value at alpha 0.05 (one tail) it is 1.9647, while the calculated t value is 2.780098 (positive). This means tcount>ttable, then H2 is accepted. Thus, it can be concluded that investment in Government Securities has a positive and significant effect on Return On Investment in Pension Funds in Indonesia in 2018-2022.

Hypothesis 3

H3 : Investment in shares has a positive effect on the ROI of Pension Funds in Indonesia

Based on the t test at α = 5% in table 4, the probability value of the investment variable in shares is 0.0000 or less than 0.05, it can be concluded that investment in shares has a significant effect on Return On Investment. If you look at the t table value at alpha 0.05 (two tail) it is 1.9647, while the calculated t value is -8.386830 (negative). This means that tcount<ttable, then H3 is rejected. Thus, it can be concluded that investment in shares has a negative and significant effect on Return On Investment in Pension Funds in Indonesia in 2018-2022.

Hypothesis 4

H4 : Investment in Corporate Bonds has a positive effect on the ROI of Pension Funds in Indonesia

Based on the t test at α = 5% in table 4, the probability value of the investment variable in Corporate Bonds is 0.0000 or less than 0.05, it can be concluded that investment in Corporate Bonds has a significant effect on Return On Investment. If you look at the t table value at alpha 0.05 (two tail) it is 1.9647, while the calculated t value is 5.618072 (positive). This means tcount>ttable, then H4 is

accepted. Thus, it can be concluded that investment in Corporate Bonds has a positive and significant effect on Return on Investment in Pension Funds in Indonesia in 2018-2022.

Discussion

The first hypothesis states thatinvestment in Time Deposits has a positive and significant effect on Return On Investment in Pension Funds in Indonesia 2018-2022. The results of testing the investment variable in Time Deposits on Return On Investment partially show that investment in Time Deposits has a negative and significant influence on Return On Investment in Pension Funds in Indonesia in 2018-2022. Thus it can be concluded that H1 is rejected.

The second hypothesis states thatinvestment in Government Securities has a positive effect on Return On Investment in Pension Funds in Indonesia 2018-2022. The results of testing the investment variable in Government Securities on Return On Investment partially show that investment in Government Securities has a positive and significant influence on Return On Investment in Pension Funds in Indonesia in 2018-2022. Thus it can be concluded that H2 is accepted.

The third hypothesis states thatinvestment in shares has a positive effect on Return On Investment in Pension Funds in Indonesia in 2018-2022. The results of testing the investment variable in shares on Return On Investment partially show that investment in shares has a negative and significant influence on Return On Investment in Pension Funds in Indonesia for 2018-2022. Thus it can be concluded that H3 is rejected.

The fourth hypothesis states thatinvestment in Corporate Bonds has a positive effect on Return On Investment in Pension Funds in Indonesia in 2018-2022. The results of testing investment variables in Corporate Bonds on Return On Investment partially show that investment in Corporate Bonds has a positive and significant influence on Return On Investment in Pension Funds in Indonesia 2018-2022. Thus it can be concluded that H4 is accepted.

The research results also show thatinvestment in Time Deposits, investment in Government Securities, investment in Shares and investment in Corporate Bonds together have a significant influence on the Return On Investment of Pension Funds in Indonesia in 2018-2022. Simultaneous test results show that investment in Time Deposits, investment in Government Securities, investment in Shares and investment in Corporate Bonds have a significant influence on Return On Investment in Pension Funds in Indonesia in 2018-2022. Thus it can be concluded that the hypothesis is accepted.

4. Conclusion

Based on the results of data analysis regarding the analysis of the influence of investment in Time Deposits, investment in Government Securities, investment in Shares, and investment in Corporate Bonds on Return On Investment (Empirical study on Pension Funds in Indonesia for the period 2018 to 2022) that has been carried out can be withdrawn conclusion as follows:

4.1 Investment in Time Deposits has a negative and significant influence on Return On Investment in Pension Funds in Indonesia for the 2018-2022 period, meaning that changes in the value of investment in Time Deposits have a unidirectional influence on changes in Return On Investment or in other words if investment is in Time Deposits increases, there will be a decrease in the level of Return on Investment and statistically it has a significant influence.

4.2 Investment in Government Securities has a positive and significant influence on Return On Investment in Pension Funds in Indonesia for the 2018-2022 period, meaning that changes in the value of investment in Government Securities have a directional influence on changes in Return On Investment or in other words if investment is in Securities If the country increases, there will be an increase in the level of Return on Investment, and statistically it has a significant influence.

4.3 Investment in Shares has a negative and significant influence on Return On Investment in Pension Funds in Indonesia for the 2018-2022 period, meaning that changes in the value of investment in Shares have a unidirectional influence on changes in Return On Investment or in other words, if investment in Shares increases, there will be decrease in the level of Return On Investment and statistically has a significant effect.

4.4 Investment in Corporate Bonds has a positive and significant influence on the Return On Investment of Pension Funds in Indonesia for the 2018-2022 period, meaning that changes in the value of investment in Corporate Bonds have a direct influence on changes in Return On Investment or in other words, if investment in Corporate Bonds increases, it will there was an increase in the level of Return On Investment and statistically it had a significant influence.

4.5 If tested together, the results are:investment in Time Deposits, investment in Government Securities, investment in Shares, and investment in Corporate Bonds together have a positive and significant effect on Return On Investment in Pension Funds in Indonesia for the 2018-2022 period, that means investment in Time Deposits, Investment in Government Securities, investment in Shares, and investment in Corporate Bonds must be given more attention and increased by the Pension Fund Management. Pension Fund Management needs to determine an asset allocation strategy by considering the size and complexity of Pension Fund management. Pension Fund Management also needs to set maximum limits on the proportion that can be placed for each type of investment, including limits per party, including placing high-risk investments such as shares. For this reason, Pension Fund Management needs to be equipped with adequate skills in the field of investment management, including risk management.

On the other hand, regulators can reconsider the rules regarding the placement of short-term investments in the money market, such as Time Deposits, which are more suitable for liquidity needs, considering that investment management in Pension Funds is long-term for the needs of sustainable income in retirement for participants.

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