

# The Effect of Investment Instrument of the Pension Fund toward Return on Investment of Defined Benefit Pension Plan from Employer Pension Fund in Indonesia

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**Abstract---** This study aims to find out the investment instruments that have effect on return on investment of the employer pension fund in a defined benefit of pension plan in Indonesia (defined benefit pension plan from employer pension fund). The data used are investment instruments that are permitted for industrial pension funds, return on investment as the secondary data taken from monthly pension fund statistics in the period 2015-2016, and a defined benefit pension plan from employer pension fund industry uses multiple regression with the type of research verification. The results show that deposit certificates and asset backed security have a positive effect on return on investment defined pension plan from employer fund retirement, while shares and mutual funds have a negative effect. This research is useful for those who manage defined benefit pension plan from employer pension fund to allocate funds for investment instrument that results high return on investment because the managers have responsibility for loss and inability to pay employee pension fund and for the financial service authority. This research is also useful to make policy changes about fund allocation limit that are allowed, and the investment instrument that can be used for defined benefit pension plan from employer retirement funds in order to get maximum profit.

**Keywords---** Investment, Employer Pension Fund, Defined Benefit Pension Plan, Return on Investment.

## I. Introduction

Employer pension fund is a pension fund made by a person or entity that have employees. It is for employee benefit which actually is taken from their contribution, and it can be obtained only from employers or employees and employees. The employer pension fund can hold a defined benefit pension plan or a defined contribution pension plan with the main differentiation are (1) the certainty of the pension benefit amount for participants is calculated based on certain formula and in accordance with regulation (2) there is no risk for participants (3) there is a funding risk for the employer (4) uncertainty in the amount of contributions to the employer (5) the employer as the person in charge of risk; (6) the administration of pension funds is joined by all participants. The risk burden is on the employer, so that the employer pension fund management of the defined benefit pension plan from the employer pension fund strives to increase the profitability of its business activities which is calculated by return on investment.

The employer pension fund in the form of a defined benefit pension plan collects funds from employers and employees to invest in investment instruments that are permitted by the Financial Services Authority regulation (OJK) number 3 / POJK.05 / 2015 with a certain maximum allocation. Maximum allocation of investment is made, so that employer pension funds can diversify investments to make the risks become low and to be hoped that return on investment will be high[1].

The allocation of investment instruments based on Financial Services Authority (OJK) regulations, which allow 100% allocation is government bonds. Investment instruments with an allowance of a maximum of 20% are Asset Backed Security, Bond, Building, Central Bank Bond, Certificate Deposit, Collective Investment Contract, Depositor Call, Land, Land and Building, Mutual Fund, REPO, Saving Share, *Sukuk*, Stock Option Contract, and Time Deposit

Investment instrument with a maximum allocation of 10% is Medium Term Note. While investment instruments in Direct Placement in Share, the placement of funds in domestic companies is a maximum of 15% and a maximum of 5% in overseas companies.

Allocation of the top five funds during the study period was 23.57% in government bonds, 24.15% in bonds, 15.28% in shares with 14.86% in time deposits, 7.28% in mutual funds.

The research gaps in this study is

- a. Profitability increases in accordance with the objectives of the financial services authority regulation but the allocation of investment instruments is not in accordance with the provisions of financial services authority, namely bond allocation of funds above the maximum limit of 20%, namely bonds at 24.15% so that employer pension funds from defined benefit pension funds industry will be subject to sanctions by the Financial services Authority, namely administrative sanctions, termination of investment management up to dismissal of employer pension fund managers.
- b. Fund allocation to bonds is the largest allocation of funds, but in the research results of [2], [3], research by Alfiana, Simatupang, Borshalina (2018), and Alfiana and Siska (2018) show that the fund placement has a correlation which is high with other investment instruments, so that multicollinearity problems occur which are finally released in the research model. From previous research using data from the pension fund, the financial institution pension fund, the employer pension fund in a defined contribution pension plan shows that investment instruments in bonds do not yet have a positive effect, or have a negative effect or no effect on return on investment[4].

This raises research problems because the allocation of investment instruments to bonds exceeds the specified limits and no previous research shows bonds that have a positive effect on increasing return on investment as a form of profitability.

The purpose of the study is to know the instrument investment that has an effect on return on investment. This research is carried out in a defined retirement benefit plan for an employer pension fund.

The results of this study are useful for defined benefit pension plans for employer pension fund industries because managers of employer pension funds in the defined benefit pension plan will bear the loss if the investment returns of the pension fund are insufficient funds that will be accepted by the employer pension fund participant. The violation of Financial Services Authority rule number 3 / POJK.05 / 2015[5] in the form of maximum investment allocation limits in fund retirement is subject to severe sanctions such as termination of investment management, if that happens, both the participant and the employer of the pension fund cannot receive or pay pension fund.

## II. Literature Review

Law No. 11 of 1992 concerning pension funds states that pension funds are legal entities that manage and run programs that promise retirement benefits. The types of pension fund are an employer pension fund and financial institution pension fund [6]. Defined benefit pension funds can only be done by employer pension funds while the defined contribution of a pension fund can be done by both the employer financial fund and the financial institution pension fund.

The investment instrument is the allocation of assets in which the pension fund industry will invest funds into it. Pension funds are allowed to invest their funds in 19 investment instruments with a certain maximum allocation in accordance with the regulations of the financial service authority No.3 / POJK.05 / 2015[7].

Research on how the pension fund industry should allocate funds done by Owusu, et al (2016) in Ghana, the results of the study show that if you want to minimize risk the percentage of funding allocation should be 53.65% in student loans, 19.56% in short-term investment, 19.55% in properties 5.87% in investment available for sale and 1.37% in investment held to maturity. Whereas if you want to maximize the return at a minimum risk level of 3.6%, you should invest as much as 28.85% in a one-year Treasury bill, 26.76% to student loans, 24.19% to short-term investments, 10.3% to properties, 9.22% to investment available for sale and 0.96% to loans and receivables[8].

In contrast to Owusu et al (2016), [9] research was conducted on all pension funds in Indonesia, then [10] on employer pension funds that used a defined contribution retirement plan, then [11][12] on the financial institution's retirement plan, then Alfiana, Simatupang, Borshalina (2018) on the overall pension fund. The study searches for investment instruments that influence both positive and negative posts on return on investment by looking at the choice of financial instruments is not the proportion [13][14]. The results show many differences in investment

instruments that have a positive effect on profitability as measured by Return on Investment, namely investment instruments in buildings, time deposits, building, government bonds, *sukuk*, asset backed security. Investment instruments that have a negative effect are shares, land-building, *sukuk*, direct placement in share. The difference in the results of this study is due to differences in the duration of the research, data, significant level, and handling of the classic assumption test [17].

The underlying theory of the portfolio from [15] is how to choose an investment portfolio from various assets to maximize expected returns at a certain level of risk that investors are willing to bear. Risk can be minimized through diversification and combining various investment instruments into portfolios. Implementing diversification in the pension fund industry is by combining investment instruments to produce high returns on investment [17-20].

### III. Methodology

This research is a verificative research using multiple regression with secondary data in the form of 19 investment instruments and return on investment that comes from pension fund statistics from March 2015 to November 2018 with defined benefit pension funds for employer pension funds [16].

#### Research Model

ROI defined benefit pension plan on employer pension fund =  $\beta_0 + \beta_1 \text{Asset Backed Security} + \beta_2 \text{Bond} + \beta_3 \text{Building} + \beta_4 \text{Central Bank Bond} + \beta_5 \text{Certificate Deposit} + \beta_6 \text{Collective Investment Contract} + \beta_7 \text{Deposit On Call} + \beta_8 \text{Direct Placement In Share} + \beta_9 \text{Government Bond} + \beta_{10} \text{Land} + \beta_{11} \text{Land and Building} + \beta_{12} \text{Medium Term Note} + \beta_{13} \text{Mutual Fund} + \beta_{14} \text{REPO} + \beta_{15} \text{Saving} + \beta_{16} \text{Share} + \beta_{17} \text{Stock Option Contract} + \beta_{18} \text{Sukuk} + \beta_{19} \text{Time Deposit} + \varepsilon$

Where  $\beta_0$ : Intercept and  $\beta_1$  until  $\beta_{19}$  are coefficient investment instrument

(*Asset Backed Security, Bond, Building, Central Bank Bond, Certificate Deposit, Investment Contract Collective, Deposit On Call, Direct Placement In Share, Government Bond, Land, Land and Building, Medium Term Notes, Mutual Funds, REPO, Saving, Share, Contract Stock Options, Sukuk, Time Deposits*)

Hypotheses of this research were as follows:

- 1 H1 Investment instrument on  $X_i$  partially influences the return on investment of defined benefit pension plans on employer pension funds,
- 2 H2 All investment instrument simultaneously influences the return on investment of defined benefit pension plans on employer pension funds.

The  $X_i$  was investment instrument in defined benefit pension plan for employer pension funds, there were 19 instrument investment,  $i$  from 1 to 19

#### Hypothesis Test

##### T Test

- 1 H 0 1  $X_i$  investment instruments have no effect on the return on investment of defined benefit pension plans on employer pension funds,
- 2 H 1 1  $X_i$  investment instruments have an effect on returns on investment of defined benefit pension plans on employer pension funds,

Description:  $i$  from 1 to 19

$X_i$  was an investment instrument in a defined benefit pension plan for employer pension funds, there were 19 instrument investment,  $i$  from 1 to 19.

##### F Test

- 1 H 0 2 All simultaneous investment instruments have no effect on the return on investment of defined benefit pension plans on employer pension funds
- 2 H 1 2 At least there was one instrument of investment in financial institutions that has an impact on investment of defined benefit pension plans on employer pension funds

The significant level of  $\alpha = 0.05$

### IV. Result and Discussion

Return on Investment (ROI) defined benefit pension plan from employer pension funds every November can be seen in figure 1. The implementation of Financial Services Authority (OJK) regulation number 3 / POJK.05 / 2015 will lead to changes in the allocation of funds to investment instruments according to the maximum limits applicable. This had the impact in a sharp decline in return on investment in November 2016 after it showed an increasing trend

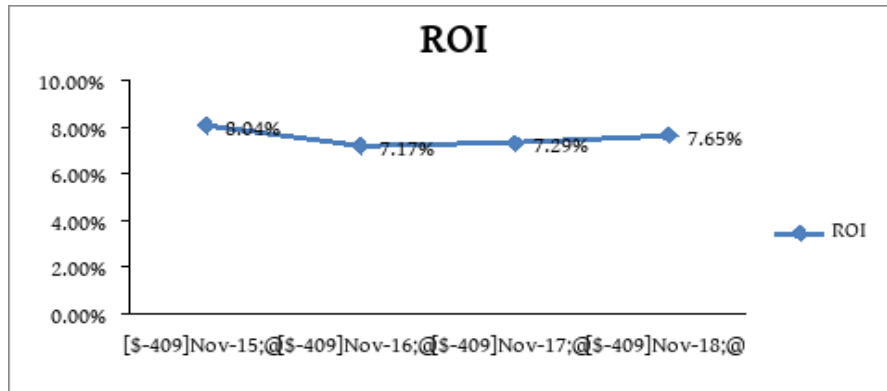


Figure 1: Return on Investment (ROI)

**Source: Defined Benefit Pension Plan from the Employer Pension Fund Statistics**

Data on REPO instrument investment and stock option contracts during the study period have no data. Financial instruments that are not normal data are central bank bonds, on call deposits, government bonds so that the data processed is only 14 investment instruments. Data processing is continued to classic assumption test where there are multicollinearity problems, namely direct bond placement in share, medium term note, so the data processed are only 11, namely asset backed security, building, certificate deposit, collective investment contract, mutual fund, land, land building, saving, share, *sukuk*, and time deposit which development is seen in figure 2.

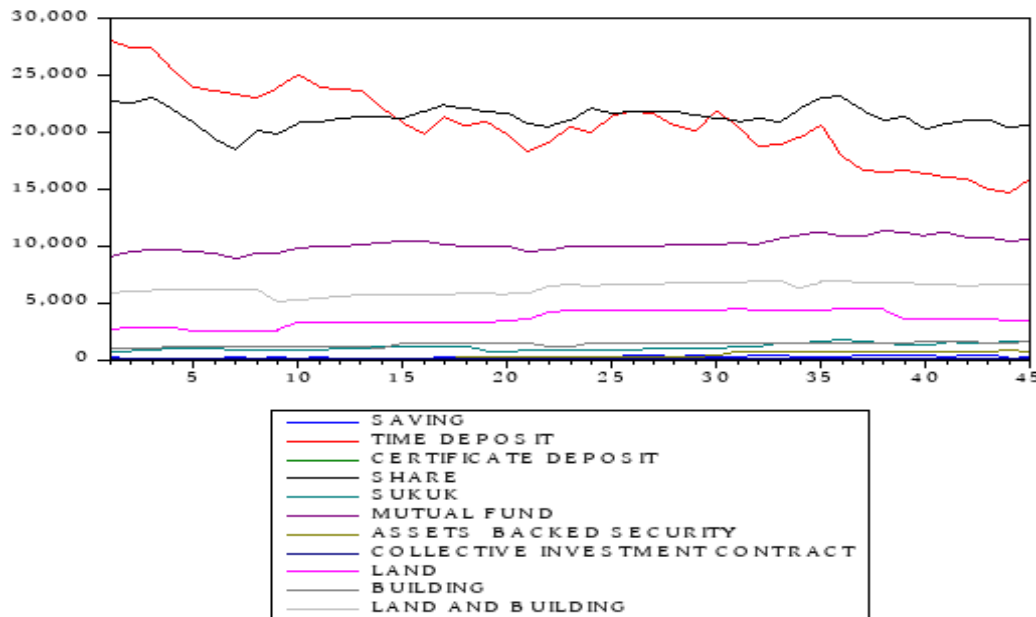


Figure 2: Investment Instrument

**Sources: Defined Benefit Pension Plan from the Employer Pension Fund Statistics**

In figure 2, there are fluctuations in the investment instrument Defined Benefit Pension Plan from the Employer Pension Fund in rupiah with average funds allocation during the period of research on asset backed security, building, certificate deposits, collective investment contracts, mutual funds, land, land-building, saving, shares,

*sukuk*, and time deposits respectively 0.63%; 0.95%; 0.021%; 0.07%; 7.28%; 2.6%; 4.5% 0.16%; 15.28%; 0.81% 14.85%.

To find out which research model is formed well and properly (fit model), and each instrument can be seen in the R square and F test in table 1. Table 1 shows that the research model has R square of 54.19%, this value indicates that changes in return on investment can be explained by changes in investment instruments by 54.19%, the remaining 45.81% is influenced by other factors that are not this research includes internal and external aspects.

Table 1: R square, F test and T test

Investment Instrument	Coefficient	Prob.
C	0.577323	0,0002
SAVING	-3.23E-05	0.3687
TIME_DEPOSIT	1.49E-06	0.5817
CERTIFICATE_DEPOSIT	0.000594	0.0307
SHARE	-9.55E-06	0.0312
SUKUK	8.72E-06	0.5841
MUTUAL_FUND	-2.61E-05	0.0069
ASSETS__BACKED_SECURITY	8.12E-05	0,0004
COLLECTIVE_INVESTMENT_CO	9.29E-05	0.5402
LAND	-8.83E-06	0.2547
BUILDING	2.30E-05	0.5661
LAND_AND_BUILDING	-2.40E-05	0.0961
R-squared	54.19%	
F-statistics	3.5498	
Prob (F-statistic)	0.0023	

**Sources: Data processing result**

In Table 1, look Prob F statistic of 0.023, the value is smaller than the significant level  $\alpha$  of 0.05 so that  $H_0$  1 rejected, research models declared fit / decent. After the research model is formed from a combination of investment instrument asset backed security, building, certificate deposit, collective investment contract, mutual fund, land, land-building, saving, share, *sukuk*, and time deposit, it will be seen the influence of each investment instrument on return on investment through the T Test .Table 1 shows value in column prob certificates, deposits, shares, mutual funds, asset backed security, smaller than the significant level  $\alpha$  of 0.05 so that the null hypothesis ( $H_0$  1) rejected it means increase or decrease of investment instruments on a deposit certificate , share, mutual fund, asset backed security has an effect on the increase or decrease of return on investment defined benefit pension plan on employer pension funds. In column coefficient, it can be seen that coefficient for certificate deposit and asset backed security is positive, meaning that the increase in investment instrument certificate deposit and asset backed security will increase return on investment while share and mutual funds in column coefficient are negative, meaning an increase in investment instruments on shares and mutual funds will reduce return on investment defined benefit pension plan on employer pension funds. This study supports Alfiana (2018), Alfiana and Siska (2018), Alhanaqtah and Alhanaqtah (2018) researches that share has a negative effect on return on investment and Alfiana and Siska that asset backed security has a positive effect on return on investment. A certificate issued by a commercial bank has the advantage that it can be guaranteed and get a fixed interest. Asset backed security has the advantage of being more attractive than other debt securities because it is supported by liquid assets with a relatively small risk if the asset backed security issuer goes bankrupt / goes bankrupt, the bill will remain because there is collateral for the asset. This study provides different results from previous studies. In this research, certificate deposit has a positive effect on return on investment because the certificate deposit will get interest depending on the interest rate, rising,

fixed or decreasing. Mutual funds have a negative effect because the rate of return fluctuates depending on the money market and the capital market if the composition of the mutual fund is dominated by stocks, a decrease in the price below the purchase price will have an impact on profitability and will affect the return on investment.

## V. Conclusion

The pension plan defined benefit for retirement fund employers has definite payments to participants depending on agreed calculations based on certain formulas which involves a certain percentage, length of service and basic salary. The merger of the funds administrating all participants, the uncertainty of the amounts of fees for employers, the responsibility for risk is on the employer that causes the number of companies that use defined benefit pension plan is starting to be left and declined because it will be company burden if the investment management is not maximized. From the results of the study, there is an allocation of funds to investment instruments that exceed the regulatory requirements, namely bonds at 24.15% so that employer pension funds from defined benefit pension fund industries will be penalized by the Financial Services Authority (OJK) starting from administrative sanctions, management termination investment up to the dismissal of the employer pension fund manager. This research is useful for industrial defined benefit pension plans in employer pension funds to increase the allocation of funds in investment instrument certificate deposits and asset backed security to the maximum allowable limits and reduce the allocation of funds to investment instruments share and mutual funds as low as possible. This research is useful for the financial services Authority (OJK) to tighten supervision and review the maximum allocation of funds at investment instruments that benefit the defined benefit pension plan for employer pension funds.

## References

- [1] Alfiana 2018, The Influence of Portfolio Investment of Pension Fund to Profitability of Pension Fund Industry in Indonesia since The implementation of the Authority of Financial Service Regulations, Proceeding of the 5 th International Conference on Business and Banking, 2-3 August 2018, Denpasar Bali, ISBN : 978-602-96319-9-9
- [2] Alfiana and Andi Santika 2018, The Effect of Pension Fund Investment Type on Profitability Defined Contribution Pension Pland from Employer Pension fund in Indonesia, Proceedings: 4th International Seminar and Conference 2018, The Society Empowerment though Creative Economics and Education in Disruptive Era November 15 2018, , Jakarta ISBN 978-602-17102-5-8
- [3] Alfiana and Siska Putri 2018, The Impact of Pension Fund Investment Type on Return on Investment Financial Institutions Pension Fund Industry in Indonesia, Proceeding: 4th International Seminar and Conference 2018, The Society Empowerment though Creative Economics and Education in Disruptive Era November 15 2018 ,, Jakarta ISBN 978-602-17102-5-8
- [4] Alfiana, Ervina CM Simatupang., TitaBorshalina 2018, Investment Portfolio of Pension Funds: Regulation and Implementation, International Journal of Engineering & Technology 7 (4.34) (2018) 248-252 p.248-252 DOI: 10.14419 / ijct.v7i4. 34.23900
- [5] Ministry of Finance of the Republic of Indonesia, 2002, Decision of Director General of Financial Institutions Number: KEP-2233 / LK / 2003 concerning guidelines for Preparation of Pension Fund Investment Reports
- [6] Apoorva Pahadia, Rakhi Gawde, Shikha Agrawal, Nimita Manocha. "Utilization of Natural Superdisintegrants in or dispersible Tablets: A Review." International Journal of Pharmacy Research & Technology 3.2 (2013), 06-10. Print.
- [7] Financial Service Authority, 2016 Pension Fund Statistic, Viewed 1 January 2019, <https://www.ojk.go.id/id/kanal/iknb/data-dan-statistik/dana-pensiun/Pages/Statistik-Dana-Pensiun-December-2016.aspx>
- [8] Financial Service Authority, 2017 Pension Fund Statistic, Viewed 1 January 2019, <https://www.ojk.go.id/id/kanal/iknb/data-dan-statistik/dana-pensiun/Pages/Statistik-Dana-Pensiun-December-2017.aspx>
- [9] Financial Service Authority, 2018 Pension Fund Statistic, Viewed 1 January 2019, <https://www.ojk.go.id/id/kanal/iknb/data-dan-statistik/dana-pensiun/Pages/Statistik-Dana-Pensiun-August-2018.aspx>
- [10] Hussain, H.I., Shamsudin, M.F., Anwar, N.A.M., Salem. M.A. &Jabarullah, N.H. (2018). The Impact of Shari'ah Compliance on the Adjustment to Target Debt Maturity of Malaysian Firms, European Research Studies Journal, 21 (2), 48 – 61.

- [11] A.R.Surendheran, K.Prashanth Assistant Professor, Associate Professor, Computer Science and Engineering, K.S.R College of Engineering, Information Technology, K.Rangasamy College of Technology. "A Survey of Energy-Efficient Communication Protocol for Wireless Sensor Networks." *International Journal of Communication and Computer Technologies* 3.2 (2015), 50-57. Print.
- [12] Financial Services Authority, 2015, Financial Services Authority Regulation no.3 / POJK.05 / 2015 on March 31, 2015 concerning investment in pension funds.
- [13] Owusu, D. Asamoah, Appiah, SK, Omari-Sasu, AY, Owusu 2016, Allocation under the Markowitz Asset Pension Model: A Case of National Pension Scheme in Ghana, *Applied Mathematics* 2016 ^ (4): 86-91 Scientific & Academic Publishing, DOI : 10.5923 / j.am.20160604.04
- [14] Majeed, A.S. "Eco-friendly design of flow injection system for the determination of bismarck brown R dye (2018)", *International Journal of Pharmaceutical Research*, 10 (3), pp. 399-408.
- [15] Alhanaqtah, O. J. M., &Alhanaqtah, V. V. A. (2018). Governance Indicators for Strategic Business Decisions: Diversity of Western Asian Countries in Terms of Democracy. *Asian Economic and Financial Review*, 8(3), 378-393.
- [17] Anthony, M., Osho, G. S., & Sen, L. (2017). An Econometric Planning Model of Urban Forestry as a Measure of Sustainability: A Matrix of Action and Change. *International Journal of Sustainable Development*, 6(1), 9-32.
- [18] Ahmed, U., Majid, A. H. A., & Zin, M. M. (2016). Moderation of meaningful work on the relationship of supervisor support and coworker support with work engagement. *The East Asian Journal of Business Management (EAJBM)*, 6(3), 15-20.
- [19] Anwar, C., Saregar, A., Yuberti, Y., Zellia, N., Widayanti, W., Diani, R., &Wekke, I. S. (2019). Effect Size Test of Learning Model ARIAS and PBL: Concept Mastery of Temperature and Heat on Senior High School Students. *EURASIA Journal of Mathematics, Science and Technology Education*, 15, 3.
- [20] Jermittiparsert, K., T. Sriyakul & S. Rodoonsong. 2013. "Power(lessness) of the State in the Globalization Era: Empirical Proposals on Determination of Domestic Paddy Price in Thailand." **Asian Social Science** 9 (17): 218-225.
- [21] Suryanto, T., Haseeb, M., &Hartani, N. H. (2018). The Correlates of Developing Green Supply Chain Management Practices: Firms Level Analysis in Malaysia. *International Journal of Supply Chain Management*, 7(5), 316.