# An Alternative Measurement of The Rate of Return on Investment Portfolio in Insurance Company

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**Abstract**

*The main part of this paper is to analyze the measurement of the rate of return on a realized investmentportfolio. In this section, this study will simulate calculations on existing rate of return measurements with the same investment portfolio data over a period of one year. The investment portfolio contains indirect investment instruments in the form of securities in the money market and capital market. Then an analysis is carried out, and it is concluded that one measurement is more ideal and reflects the actual performance of theinvestment portfolio. The measurement of the net investment income ratio is a realistic measurement, acceptable and reflects actual performance. This is because the measurement considers the investment placement period with a weighted average of the rate of return on investment. This study provides alternative decision-making for insurance industries and investment managers in determining the rate of return on the investment portfolio, whereas other researchers have never conducted this study.*

**Keywords:** rate of return; investment portfolio; insurance company

## Introduction

An insurance company is one of the companies in the financial sector with its core business to operate the function of financial intermediaries. The function of financial intermediaries is to collect funds from customers/participants/community then these funds are managed (Brigham & Houston, 2019). The management of the collected funds is through allocating funds into several investment assets. Some of these investment assets can be in the form of direct or indirect investment. Direct investment can take the form of investing in company shares and establishing a subsidiary company. Indirect investment can be in the form of securities both in the money market and in the capital market. Furthermore, when the investment returns are obtained, they will be redistributed to the beneficiaries.

A collection of several investment assets will become an investment portfolio. The investment portfolio at each certain ending period, which in general is one year, needs to be measured its overall rate of return. So, it will be known the performance of the investment portfolio. This is done with the aim that the company can know the achievements that have been obtained from managing its investment funds for the survival of the company. Return consists of expected return which means that the return has not yet happened, but the expected return will be obtained by investors in the future. Expected return measurement group (Pedersen & Ruddholm, 2003), for example Sharpe ratio (Sharpe, 1994), Treynor ratio(Treynor, 1965), Jensen's alpha (Jensen, 1967), Information ratio (Goodwin, 1998), Sortino ratio (Sortino & Van Der Meer, 1991), Omega function (Keating & Shadwick, 2002) and the Sharpe Omega ratio (Hentati-kaffel & Prigent, 2012). In addition, there is also a realized returnwhich means that the return has happened. Realized return is very important because it is usedas a measure of the performance of the investment portfolio.

The performance or it can be called the rate of return from an investment portfolio can be measured only through its return (Hartono, 2017). Portfolio return is the weighted average of every single asset return in the portfolio. In general, in Indonesia, insurance companies measure the rate of return on their investment portfolio using the yield on investment. The formula is by comparing the investment return with the investment value in a one-year period. Fabozzi &Markowitz (2011) called the measurement of portfolio return the holding period return or the ex-post return. Where the return on the investment portfolio is equal to the sum of the multiplication results between all single asset allocation weights in the portfolio and their respective returns.

Another measurement, according to R. Arthur Saunders, FSA, FCIA (1986) in his book "Life Insurance Financial Statements: Keys to Successful Reporting". Saunders (1986) suggests that the exhibit of gross investment income shows the calculation of incurred income for each class of investment by adding income due and accrued to the amount collected, subtracting unearned and non-admitted income at the end of the current year, and adjusting for the corresponding figures at the end of the previous year. The main part of this paper is to analyze the measurement of the rate of return of the investment portfolio that has been realizedusing the three measurements above.

## Methods

In this section, this research will simulate calculations on existing rate of return measurements with the same investment portfolio data over a period of one year. The investment portfolio contains indirect investment instruments in the form of securities in the money market and capital market. Then an analysis will be carried out, and it will be concludedthat one measurement is more ideal and reflects the actual performance of the investment portfolio. Measurement of the rate of return-on-investment portfolios, among others:

1) Yield on investment

Based on the policy of regulators in Indonesia to calculate the rate of return on an insurance company's investment portfolio using the formula:

$$\text{YOI} = \frac{return\ \ investment}{average\ investment\ value}$$

$$average\ investment\ value = \sqrt[n]{X_1\ x\ X_2\ x\ \ldots\ldots\ldots x\ X_n}$$

where $X$ is the investment value at the end of the month, and $n$ is the number of months (12months).

2) The holding period return or the ex post return

According to Fabozzi & Markowitz (2011) to measure portfolio returns using the formula:

$$R_p = w_1R_1 + w_2R_2 + \quad \ldots\ldots\ldots\ldots\ldots \quad + w_nR_n$$

where
$R_p$ rate of return on the portfolio over the period
$R_n$ rate of return on asset n over the period
$w_n$ weight of asset n in the portfolio at the beginning of the period
$n$ number of assets in the portfolio

3) The ratio of net investment income

According to Saunders (1986) to calculate the ratio of net investment income with the formula:

$$\text{the ratio of net investment income} = \frac{2I}{A + B - I}$$

where $I$ is net income for the current year, then $A$ and $B$ respectively are assets invested at the end of the previous year and the current year and both plus net income due and accrued minus borrowed funds. Then, if the investment cost of the separate account investment has been included in the investment cost, it must be added back to the net investment income ($I$) beforethe ratio is calculated.

**Results and Discussions**

In this section, we measure the rate of return on the investment portfolio of an insurancecompany in Indonesia which consists of seven investment instruments i.e. time deposits, securities, mutual funds, bonds, sukuk, medium term notes, and collective investment contractassets (audited data). This investment portfolio is placed for a one-year period between 1 January to 31 December as described in Table 1.

**Table 1.** Example of an investment portfolio in value and return

| NO | INTRUMEN | INVESTMENT VALUE | | RETURN |
|---|---|---|---|---|
| | | INITIAL YEAR | CURRENT YEAR | CURRENT YEAR |
| 1 | Time deposits | 10.000.489.111.978 | 10.492.864.093.790 | 502.054.991.855 |
| 2 | Securities | | | |
| | Investment at fair value through profit and loss | 300.000.000.000 | 600.000.000.000 | 302.681.791.754 |
| | Available for sale investments | 9.189.393.058.459 | 8.877.437.110.655 | 981.300.000.000 |
| 3 | Mutual funds | | | |
| | Available for sale investments | 10.586.957.793.876 | 13.750.278.580.955 | 825.000.000.000 |
| | Held to maturity investments | 7.128.897.595.529 | 8.848.840.000.000 | 1.028.016.333.333 |

| | | | | |
|---|---|---|---|---|
| 4 | Bonds | | | |
| | Available for sale investments | 38.515.961.125.802 | 30.810.581.574.907 | 1.268.728.976.368 |
| | Held to maturity investments | 10.630.004.439.064 | 13.692.434.564.045 | 3.892.138.801.960 |
| 5 | Sukuk | | | |
| | at fair value through other comprehensive income | 1.477.265.777.008 | 1.515.285.240.100 | 0 |
| | at cost | 6.450.596.887.160 | 7.371.952.704.456 | 666.854.023.938 |
| 6 | Medium term notes | | | |
| | Available for sale investments | 882.417.998.773 | 386.266.081.099 | 0 |
| | Held to maturity investments | 2.670.000.000.000 | 2.670.000.000.000 | 367.065.322.581 |
| 7 | Collective investment contract asset | 1.972.824.215.647 | 1.982.304.254.502 | 186.495.179.089 |
| **TOTAL** | | **99.804.808.003.296** | **100.998.244.204.509** | **10.020.335.420.878** |

Note : All numbers use Rupiah Indonesia currency

For example, in Table 1 explains that the total value of the initial investment portfolio as much IDR 99,804,808,003,296 has increased as much IDR 1,193,436,201,213 to become asmuch IDR 100,998,244,204,509 in the total value of the current investment portfolio. For oneyear, the current investment portfolio earns a total return of as much IDR 10,020,335,420,878. The total return on the current investment portfolio is measured by the rate of return using themeasurement 1, in general it is carried out by insurance companies to comply with Indonesian regulatory rules using yield on investment measurements so as to obtain a yield of 9.92% as described in Table 2.

**Table 2.** The rate of return measurements

| NO | INSTRUMENT | RATE OF RETURN | | |
|---|---|---|---|---|
| | | **MEASUREMENT 1** | **MEASURMENT 2** | **MEASUREMENT 3** |
| 1 | Time deposits | 4,78% | 0,50% | 5,02% |
| 2 | Securities | | | |
| | Investment at fair value through profit and loss | 50,45% | 0,30% | 101,35% |
| | Available for sale investments | 11,05% | 0,97% | 11,49% |
| 3 | Mutual funds | | | |
| | Available for sale investments | 6,00% | 0,82% | 7,02% |
| | Held to maturity investments | 11,62% | 1,02% | 13,75% |
| 4 | Bonds | | | |
| | Available for sale investments | 4,12% | 1,26% | 3,73% |
| | Held to maturity investments | 28,43% | 3,85% | 38,10% |
| 5 | Sukuk | | | |
| | at fair value through other comprehensive income | 0,00% | 0,00% | 0,00% |
| | at cost | 9,05% | 0,66% | 10,14% |
| 6 | Medium term notes | | | |
| | Available for sale investments | 0,00% | 0,00% | 0,00% |
| | Held to maturity investments | 13,75% | 0,36% | 14,76% |
| 7 | Collective investment contract asset | 9,41% | 0,18% | 9,90% |
| **TOTAL** | | **9,92%** | **9,92%** | **10,50%** |

This measurement is to compare the current investment total return to the current investment value which ends on December 31, respectively. This measurement ignores the placement period and assumes that all investment returns obtained from the placement of investment values are over a one-year period. When trying to calculate the rate of return on a single asset i.e., time deposits obtained a yield of 4.78%. Whereas the average interest rate for time deposits in Indonesia in 2023 is 5.00% over a one-year period. This indicates that the average placement of funds in instrument time deposits has not yet reached a period of one year or 12 months, but the average placement is only 11.4 months. Therefore, this calculation does not reflect the actual rate of return of the investment portfolio.

However, it differs in the use of the formula for mutual funds, bonds and medium-termnotes which are held to maturity where each instrument obtains a rate of return of 11.62%, 28.43% and 13.75% as described in Table 2. The yield on investment measurement becomes match and reflects the actual rate of return because the placement is held for one year starting January 1 to December 31.

Based on Table 2, measurement 2 uses ex-post-return measurements (Fabozzi & Markowitz, 2011). This measurement is equal to the sum over all single asset's weights in theportfolio times their respective return. The rate of return obtained is 9.92%. This measurementaims to measure how big the percentage return contribution of each single asset to the rate of return on the investment portfolio. The highest return contribution from a single asset return is the placement of funds in bonds held to maturity investment of 3.85%. The lowest return contribution from a single asset return is the placement of funds in securities investment at fairvalue through profit or loss of 0.30%. The single asset that does not contribute to return issukuk-at fair value through other comprehensive income and bonds-available-for-sale investments.

There are several possibilities as a reason that the mentioned single asset does not contribute returns to the portfolio's rate of return. First, because trading conditions areweakening there are no potential buyers. Second, the price or exchange rate for this single asset in the market is down. However, because sukuk and mtn are fixed-income assets, in time they will still earn a return. But on the other hand, because this single asset includes available-for-sale investments (see Table 1), if the purchase price is lower than the market price, the investment will experience a loss in the exchange rate (potential loss) in the commercial accounting system.

Measurement 2 in Table 2, i.e. ex post return can be used as a basis for investment managers in making decisions about investment asset allocation. Because if you see the highestreturn contribution on a single asset then the market size is available, so the investment managercan switch and/or add investment allocation weights so that it can provide additional returns to the total return of the investment portfolio. Because the purpose of this measurement is to see the performance of one asset, then the optimization of each single return asset ignores the placement period and is assumed to be real over a period of one year.

Measurement 3 in Table 2 uses the ratio of net investment income to the investment portfolio to obtain a yield of 10.50%. This value looks higher than the two measurements previously described. This measurement is simpler but can reflect a more real rate of returnon investment portfolios. Other than this measurement considering the return, it also considersthe investment placement period of each single asset. As it is known that investors in companiesor institutions that operate the intermediary financial function are the placement pattern of investment funds is carried out periodically and is very dependent on cash surpluses (access funds). This cash surplus is collected from participant premiums and investment returns after reduced cash out. So that the funds are not idle, the funds must be invested immediately. And the funds invested in investment instruments on the money market, capital market or direct investment for business establishment or equity participation.

The decision to choose an investment instrument will depend on many factors, but in general, it depends on the company's cash flow, short or long-term. If funds in the long term can be fulfilled, then it can be invested in long-term instruments or the other way around.Because the investment placement is periodic, of course, each investment asset meant in the current year will be calculated for the return contribution in accordance with the holding period is not even one year. This has an influence on performance, and the measurement method Saunders (1968) has provided a solution.

**Conclusions**

Another thing in the discussion of returns from an investment portfolio other than expected returns also discusses the realized returns that happened. Return realization is very important because it can reflect the performance of the investment portfolio. Performance measurement in investment management continues to grow to date. In addition, it is also very necessary for individual investors, company management and shareholders. This is because related to performance recognition of one's individual capabilities and/or company which in turn will determine the amount of compensation and one's career. It is hoped that the discussion about measuring the rate of return-on-investment portfolios can contribute to academics, consultants, investment managers, capital owners, and management performance that when taking measurements, it will be more open, realistic and acceptable to all parties.

From several measurements of the rate of return on the investment portfolio of an insurance company that were analyzed, alternative measurement 3 was chosen by us. This is because measurement 3 is simpler but can reflect a more real rate of return-on-investment portfolios. In addition, in the measurement is considering the investment placement period with a weighted average to rate of return on investment. Moreover, besides this measurement 3 canbe applied in insurance companies and also its can be applied by other companies that both operatethe function of financial intermediaries.

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