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An Analysis of Influence of Interest Rates, Rupiah Exchange Rates, Gross Domestic Product (GDP), Inflation, and Indonesia Composite Index (ICI) on The Performance of Mutual Funds Using Panel Data Methods

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***Abstract*—This study investigates the influence of interest rates, Rupiah exchange rates towards the US Dollar, Gross Domestic Product (GDP), inflation, Indonesia Composite Index (ICI) towards the performance of equity mutual fund. Based on the results of previous studies conducted by Purwaningsih, et al. in 2015-2016, it was found that there was a significant influence of inflation, interest rates, and ICI simultaneously on mutual fund performance. Partially, inflation had a significant effect on mutual fund performance with a negative direction of influence; the interest rate had a significant effect on mutual fund performance with a positive direction of influence, likewise, the ICI partially had a significant effect on mutual fund performance with a positive direction of influence. Macroeconomic indicators that are often associated with the capital market are fluctuations in interest rates, the rupiah exchange rates, ICI, the growth of GDP, and inflation. In the previous study conducted by Purwaningsih, et al in 2015-2016, Rupiah exchange rates variable against US Dollar and GDP was not involved in the performance of equity mutual fund. Therefore, this research is developed by involving these two variables. The ability of investors to understand and predict future macroeconomic conditions will be very useful in making profitable investment decisions. For this reason, an investor must consider a number of macroeconomic indicators that can assist them in making their investment decisions. This research aims to analyze the effect of interest rates, rupiah exchange rates, GDP, inflation and ICI on the performance of equity mutual fund, and obtain a regression model using the Panel Data method based on data from several periods in the last year (2015-2017). From this research, the results show that interest rates, exchange rates, GDP, inflation and ICI have a significant effect on mutual fund performance with a total percentage of influence by 99.94 percent, while the remaining 0.06 percent is explained by other factors that are not included in the model.**

Keywords—interest rates, Rupiah exchange rates, GDP, Inflation, ICI, mutual funds

I. INTRODUCTION

Based on the results of the previous studies conducted in 2015, it was found that there was a significant influence of inflation, interest rates, and ICI simultaneously on the performance of equity mutual funds [1,2]. Partially, inflation showed a significant effect on the performance of mutual funds with a negative direction of influence, interest rates had a significant effect on mutual fund performance with a positive direction of influence, and ICI had a significant effect on mutual fund performance with a positive direction of influence [2]. Furthermore, based on the results of subsequent study conducted in 2017 using the Path Analysis method, it was obtained that there was a significant influence of inflation, interest rates and ICI simultaneously on mutual fund performance by15.8% [3]. It indicates that there was an influence of other factors on mutual fund performance by 84.2% [3].

From the results of previous studies, this study will be developed to see or investigate other factors that affect the performance of equality mutual fund. Mutual funds are now a promising alternative type of investment for public as well as institutions such as investors, which has developed in the Indonesian capital market.

The investors' ability to understand and predict future macroeconomic conditions will be very useful in making profitable investment decisions. For this reason, an investor must consider a number of macroeconomic indicators that can assist them in making investment decisions. Indicators of macroeconomics that are often associated with capital markets are fluctuations in interest rates, inflation, ICI, the rupiah exchange rate, the GDP, and mutual fund performance. In the previous research, the rupiah exchange rate and GDP variables have not been included so that both variables are involved in this study.

This study investigates the influence of interest rates, rupiah exchange rates, GDP, inflation, and ICI towards the performance of equity mutual fund using Panel Data method, for data in several recent years (2015-2017).

This research was carried out by following the Strategic Plan or Road Map of Polban, i.e. the leading field of Entrepreneurship Polban with creative economy entrepreneur business models as the leading topic of research. The strategic issues of this topic are poverty alleviation and strengthening economic competitiveness in order to achieve the improvement of people's welfare.

A. Research Questions

Based on the background of the research, two research questions are formulated. They are: what is the relationship pattern and how much influence does the independent variables (interest rates, rupiah exchange rates against US Dollar, GDP, inflation, and ICI) on the performance of equity mutual fund?; what is the equity mutual fund performance model towards interest rates, rupiah exchange rate against US Dollar, GDP, inflation, and ICI based on the data of 2015-2017 using the panel data method?

B. Research Purposes

This current research is purposed to find empirical evidence of the influence of interest rates, rupiah exchange rates, GDP, inflation, and ICI partially on the performance of equity mutual fund; determine the degree of influence simultaneously between interest rates, rupiah exchange rates, GDP, inflation, and ICI on the performance of equity mutual fund; determine the mutual fund performance model for interest rates, rupiah exchange rate, GDP, inflation, and ICI.

C. Research Output

The outputs of this research can be used by Fund Managers, economic analysts, investors, and public for decision making in the selection of equity investment that are more profitable for the realization of public welfare so that it can support the achievements of Strategic Plan and research road map of Polban; research report; Technology Readiness Level 3; and publication which will be presented in a national seminars, or a scientific article in a national journal.

II. LITERATURE REVIEW

There are several previous researches that are relevant to this current research. First; inflation, interest rate, and ICI significantly affect the performance of mutual fund return and unit link. It means that the fluctuation of inflation, interest rate, and ICI simultaneously affect the fluctuation of the performance of mutual fund return and unit link by 98.67% while the remaining of 1.33% explained other factors that were not included in the model of panel data [1,2]. Second; inflation, interest rates, and ICI contributed significantly to the performance of mutual funds with a total percentage of influence by 15.8% while the remaining of 84.2% explained other factors that were not included in the model of path analysis method [3]. Third; inflation, GDP, and JII had a significant influence on the NAB of Sharia Equity Funds partially. While the exchange rate and ICI had no significant effect. Simultaneously, ICI, Inflation, GDP, JII, and Exchange rates had a significant effect and contributed by 71.43% to the NAB of Sharia Equity Mutual using the multiple regression method [4]. Fourth; inflation and the exchange rate had a positive and significant effect on the ICI, while the Bank of Indonesia rates had a negative and significant effect on ICI. The method used in this research was Multiple Regression analysis [5]. Fifth; inflation had a positive and significant effect on ICI [6]. Sixth; ICI had a significant effect on mutual fund Performance with a total effect of 44.1%, while the remaining 55.9% was explained by other factors. Meanwhile, ICI had a significant effect on the performance of Unit Link and mutual funds [7]. Seventh; GDP and exchange rate changes have a significant effect with a positive correlation, interest rates and inflation rates have a significant effect with a negative correlation, simultaneously, the variable GDP, Inflation, SBI interest rates Rupiah exchange rate has a significant effect on the yield of sharia equity funds [8]. The last; interest rates had a negative effect on ICI [9].

From the previous researches above it is known that the economic variables of the rupiah exchange rate and GDP were not included. For this reason, this study will include the economic variables of rupiah exchange rate and GDP, so that the effects of rupiah exchange rate, GDP, inflation, interest rates and ICI can be analyzed.

III. RESEARCH METHODOLOGY

This study used secondary data, which included the exchange rate of the rupiah to US Dollar, Gross Domestic Product (GDP), the value of inflation and interest rates. These data were obtained from Bank Indonesia (BI), the Financial Services Authority (OJK), or the Central Bureau of Statistics (BPS), the data of ICI were obtained from the Indonesia Stock Exchange (IDX), while mutual fund performance data were obtained from several investment manager companies registered in OJK.

This study analyzes most influential factors on the response variable using the Data Panel method. The response variable was the performance of equity mutual fund, while the independent variables were the interest rate, the Rupiah exchange rate against US Dollar, GDP, inflation, and ICI. The analysis methods used were descriptive analysis, correlation analysis, and panel data.

This research was conducted though the following steps. First, Conducting literature study concerning the problems of this research. Second, determining population and research samples. Third, collecting independent variable data, i.e. interest rates, Rupiah exchange rate against US Dollar, GDP, and inflation values from Bank Indonesia (BI), the Financial Services Authority (OJK), or at the Central Bureau of Statistics (BPS). As well as daily unit price data and unit price fluctuations of ICI in the Indonesia Stock Exchange (IDX) for the last few years (2015 to 2017). Fourth, collecting mutual fund performance data from several investment manager companies in Indonesia for the last few years (2015 to 2017) as dependent variable or response variable. Fifth, analyzing: Descriptive analysis was based on the results of descriptive statistical data processing from the "SPSS" software output; Analytical analysis based on the results of data processing from the output software "EVIEUS" and "SPSS" to obtain a correlation or the magnitude of the influence between interest rates, the Rupiah exchange rate against US Dollar, GDP, inflation, and ICI on the performance of mutual funds, and determine the equation model mutual fund.

IV. RESULTS AND DISCUSSION

The following is the result of the regression calculation using the Fixed Effect (FE) approach using the assistance of Eviews 6 software. Based on the calculation results, the overall regression equation is obtained as follows:

performance = 7.238528 + 0.029074 Interest Rate – 0.484171 Exchange Rate - 0.037435 PDB – 0.014043 Inflation + 0.753840 ICI (1)

While the regression equation for each company is as follows:

1) T-statistic test: T-test is done by comparing the t-statistic (t value generated from the regression process) and t value obtained from the table or probability value with α = 5% (0.05). The hypotheses used in the t test were:

H0: There is no significant effect between the independent variables individually on the dependent variable.
H1: There is a significant influence between the independent variables individually on the dependent variable.

The explanation of the t-test results on the variables that affect performance is as follows.

a) Interest Rate Variables: The statistical value of the interest rate variable is 2.901755 with a p-value of 0.0041 and the direction of the effect is positive. It is because the p-value <0.05 or 0.0041 <0.05 then H_0 is rejected, which shows that partially the interest rate has a significant effect on performance.

b) Exchange Rate Variables: The statistical value of the exchange rate variable is -2.572583 with a p-value of 0.0107 and the direction of the effect is negative. It is because the p-value <0.05 or 0.0107 <0.05, H_0 is rejected, which shows that the exchange rate has a partially significant effect on performance.

c) GDP variable: The statistical value of the GDP variable is -1.958122 with a p-value of 0.0514 and the direction of the effect is negative. It is because the p-value> 0.05 or 0.0514> 0.05, H_0 is accepted, which shows that partially GDP does not have a significant effect on performance.

d) Inflation Variable: The statistical value of the inflation variable is -3.719596 with a p-value of 0.0002 and the direction of influence is negative. It is because the p-value <0.05 or 0.0002 <0.05 then H_0 is rejected, which shows that partially inflation has a significant effect on the performance of the Mutual Fund.

e) IHSG Variable: The statistical value of the IHSG variable is 14.72797 with a p-value of 0.0000 and the direction of the effect is positive. It is because the p-value <0.05 or 0.0000 <0.05 then H_0 is rejected, which indicates that the IHSG partially has a significant effect on performance.

2) F-statistic test: The F test is done by comparing the F-statistics (the F value resulting from the regression process) and the F value obtained from the table or the probability value with α = 5% (0.05). The hypotheses used in the F-test were:

H0: There is no significant effect between the independent variables simultaneously (together) on the dependent variable.
H1: There is a significant influence between the independent variables simultaneously (together) on the dependent variable.

Based on the calculation results, it was obtained a statistical value of 15246.82 with a p-value of 0.000000. It is because the p-value <0.05 or 0.000000 <0.05 then H_0 is rejected, which showed that interest rates, exchange rates, GDP, inflation and ICI together had a significant effect on mutual fund performance.

3) *Determination Coefficient Test (R2):* The purpose of this test is to find out the magnitude of independent variables ability to explain the dependent variable simultaneously. This testing is also useful for measuring the goodness and correctness of the relationships between variables in the model used. R2 values range between zero and one. The closer to one, the closer the relationship between the independent and dependent variables is. Conversely, if R2 is getting closer to zero, the further the relationship is between the independent and dependent variables. In the estimation results, the R2 value was 0.999403. This showed that the variable interest rates, exchange rates, GDP, inflation and ICI together explained the performance variable of 99.94%, while the remaining 0.06% was explained by other factors which were not included in the model.

4) *Random Effect (FE) Methods:* The following are the results of the regression calculation using the Random Effect (FE) approach using the assistance of Eviews 6 software. Based on the calculation results, the overall regression equation was obtained as follows:

performance= 7.238528 + 0.029074 Interest Rate – 0.484171 Exchange Rate - 0.037435 PDB- 0.014043 Inflation + 0.753840 ICI (2)

a) T-statistic test: T test is done by comparing the t-statistic (t value generated from the regression process) and t value obtained from the table or probability value with α = 5% (0.05). The hypotheses used in the T-test were:

H0: There is no significant effect between the independentvariables individually on the dependent variable.
H1: There is a significant influence between the independentvariables individually on the dependent variable.

The explanation of the results of the t-test on the variables that affect performance is as follows.

The statistical value of the interest rate variable is 2.901755 with a p-value of 0.0040 and the direction of the effect is positive. It is because the p-value <0.05 or 0.0041 <0.05 then H0 is rejected, which shows that partially the interest rate has a significant effect on performance.

The statistical value of the exchange rate variable is -2.572583 with a p-value of 0.0107 and the direction of the effect is negative. It is because the p-value <0.05 or

0.0107 <0.05, H0 is rejected, which shows that the exchange rate has a partially significant effect on performance.

The statistical value of the GDP variable is -1.958122 with a p-value of 0.0513 and the direction of the effect is negative. It is because the p-value> 0.05 or 0.0513> 0.05, H0 is accepted, which shows that partially GDP does not have a significant effect on performance.

The statistical value of the inflation variable is -3.719596 with a p-value of 0.0002 and the direction of influence is negative. It is because the p-value <0.05 or 0.0002 <0.05 then H0 is rejected, which shows that partially inflation has a significant effect on performance.

The statistical value of the IHSG variable is 14.72797 with a p-value of 0.0000 and the direction of its influence is positive. It is because the p-value <0.05 or 0.0000 <0.05 then H0 is rejected, which indicates that IHSG has a significant effect on performance.

b) F-statistic test: The F test is done by comparing the F-statistics (the F value resulting from the regression process) and the F value obtained from the table or the probability value with α = 5% (0.05). The hypotheses used in the Ftest were:

H0: There is no significant effect between the independent variables simultaneously (together) on the dependent variable.
H1: There is a significant influence between the independent variables simultaneously (together) on the dependent variable.

Based on the calculation results, it is obtained a statistical value of 487,4271 with a p-value of 0.000000. It is because the p-value <0.05 or 0.000000 <0.05 then H0 is rejected, which shows that interest rates, exchange rates, GDP, inflation and CSPI together have a significant effect on performance.

Determination Coefficient Test (R2): The purpose of this test is to find out the magnitude of the ability of independent variables to explain the dependent variable simultaneously. This testing is also useful for measuring the goodness and correctness of the relationships between variables in the model used. R2 values range between zero and one. The closer to one, the closer the relationship between the independent and dependent variables is. Conversely, if R2 is getting closer to zero, the further the relationship is between the independent and dependent variables. In the estimation results, the R2 ICI together explained the performance variable of only by 90.43%, while the remaining 9.57% was explained by other factors that were not included in the model.

V. CONCLUSION

From the results of calculations and analysis that have been done in the previous part, it is concluded as follows.

Regression Model Fixed Effect (FE) Method, partially the interest rate has a significant effect on performance; partially the exchange rate has a significant effect on performance; partially, GDP has no significant effect on performance; partially inflation has a significant effect on performance; partially the ICI has a significant effect on performance; Interest rates, exchange rates, GDP, inflation and ICI together have a significant effect on performance with a total percentage of influence of 99.94%, while the remaining 0.06% is explained by other factors not included in the model.

Regression Model Method of Random Effect (RE), partially the interest rate has a significant effect on performance; partially the exchange rate has a significant effect on performance; partially, GDP has no significant effect on performance; partially inflation has a significant effect on performance; partially the ICI has a significant effect on performance; Simultaneously inflation, interest rates, and ICI have a significant effect on performance with a total percentage of influence of 90.43%, while the remaining 9.57% is explained by other factors not included in the model.

Selection of the Best Model, The best model is the Regression Model Panel Method with the Fixed Effect (FE) Method.

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