Analysis of The Effect of Inflation, Rupiah Exchange Rate, and BI Rate on The Net Asset Value of Sharia Mutual Funds In Indonesia (2015-2019 Period)

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Abstract
This research examined the analysis of the effect of the Inflation, Rupiah Exchange Rate and BI Rate on the Net Asset Value (NAV) of Islamic Mutual Fund. Data used in this research is annually, data start from 2015 until 2019. Sampling method used in this research is purposive sampling. This research used quantitative approach method and the analysis techniques used is multiple linear regression that using Eviews Version 10.

Based on the result of this research showed that Inflation, Rupiah Exchange Rate and BI Rate simultaneously has significant effect to Net Asset Value (NAV) of Sharia Mutual Balanced Fund. The results also show that inflation has a significant negative effect on the NAV of Islamic mutual funds. The Rupiah Exchange Rate (Exchange Rate) has a significant negative effect on the NAV of Islamic mutual funds and Bank Indonesia (BI) Rate significant positive effect of the NAV of Islamic mutual funds.

Keywords: Inflation, Rupiah Exchange Rate, BI Rate, Net Asset Value, Islamic Mutual Fund.

1. Introduction
The increasing Islamic finance industry in Indonesia, which is in the midst of the dominance of conventional industrial finance which has begun to falter due to global economic shocks, makes this the initial milestone in the development of Islamic industrial finance. The increase in Islamic industrial finance occurs because Islamic industrial finance is more sharia-based which prioritizes Islamic values with the ultimate goal being to achieve a falah. Now the development of Islamic finance has begun to penetrate the capital market sector, namely with the existence of the Islamic capital market. The assumption to build a sharia capital market in Indonesia began since the emergence of sharia capital market instruments, namely sharia mutual funds.

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The number of mutual fund investors recorded at PT Kustodian Sentral Efek Indonesia (KSEI) until December 27, 2019 has reached 1,768,485 Single Investor Identification (SID) or an increase of 77.65% compared to last year's number of 995,510 SID. (www.investor.id).

Sharia investments and mutual funds have different forms of criteria from conventional mutual funds in general. According to (Firdaus et al., 2005), the most fundamental difference between conventional mutual funds and sharia mutual funds lies in the screening process, where the process serves to exclude all usury, immoral, haram and other activities (Ryandono, 2009) explaining that: "Islam views all actions done by humans in daily life, including economic activities as investments that will get returns. The return on investment in Islam corresponds to the amount of resources sacrificed and Islam teaches to always put Allah's commandments first and to draw against His prohibitions”.

The form of investment performance measurement in Islamic mutual funds is Net Asset Value (NAV). Net Asset Value (NAV) relates to the portfolio value of the mutual fund concerned. The amount of Net Asset Value (NAV) is able to fluctuate every day, depending on the Net Asset Value (NAV) indicating an increase in shareholder investment per unit of participation.

From the results of previous research, it indicates that there is a research gap from three independent variables, namely inflation, the rupiah exchange rate and the BI Rate which affect NAV. Inflation is a process of increasing prices in general and continuously (Mankiw, 2005). So according to (Putratama, 2007) with the increase in prices caused the company's profits to fall, consequently reducing the profit sharing that will be distributed to investors, so that investment is considered as unattractive. Furthermore, the company's stock price will also fall, followed by a decrease in NAV.

2. Literature Review

2.1 Signalling Theory

Signalling Theory is a theory that explains how a company signals to users of financial statements by emphasizing the importance of information released by the company on external investment decisions. According to Jama'an (2008) in Lestari (2017) this signal is able to influence investor opinions and decisions of interested parties. Signals can be in the form of promotions or other information stating that the company is better than other companies, so that when information is announced and all market participants have received the information, market participants will interpret and analyze whether the information is classified as a good signal (good news) or a bad signal (bad news).

2.2 Inflation

Inflation is defined as a general and continuous increase in prices within a certain period of time (www.bi.go.id). An increase in the price of one or two goods cannot be called inflation if the increase extends (or results in an increase in price) to other goods.

In measuring the rate of inflation, the indicator that is always used is the Consumer Price Index (CPI), where changes in CPI show price movements of packages of goods and services consumed by the public from one time to another. The determination of services and goods in the CPI basket is carried out on the basis of the Cost of Living Survey (SBH) conducted by the Central Statistics Agency (BPS). Then, BPS will monitor the development of services and prices of these goods on a monthly basis carried out in several cities, traditional markets, and modern markets for the types of services or goods in each city.

2.3 Rupiah Exchange Rate

Foreign exchange rates or foreign currency rates indicate the price or value of a country's currency
expressed in terms of the value of another country's currency. Foreign exchange rates can also be defined as the amount of domestic money needed, namely the number of rupiah needed to obtain one unit of foreign currency (Sukirno, 2015). According to Yuniarti (2016), the exchange rate describes the level of exchange prices from one currency to another and is used in various transactions, including international trade transactions, tourism, international investment or short-term money flows between countries that cross geographical boundaries or legal boundaries.

2.4 Interest Rate (BI Rate)

Interest rates can affect a person's or household's economic decisions in consuming. Interest rates can also influence economic decisions for entrepreneurs to invest in new projects, expand or postpone them. When interest rates are high, people will usually prefer to keep their money in the bank because it will get high interest. Conversely, if interest rates are low, people tend to no longer be interested in saving money in banks and investing in other more profitable places (OJK, 2016).

2.5 Net Asset Value (NAV)

Net asset value is the amount of assets net of existing liabilities. Meanwhile, NAV per participation unit is the fair price of a mutual fund's portfolio after deducting operating costs and then divided by the number of participation units that have been outstanding (owned by investors) at that time. NAV cannot be separated from mutual funds because this is one of the benchmarks in monitoring the results of a mutual fund (Tricahyadinata, 2016).

2.6 Reksadana Syariah

According to Capital Market Law Number 8 of 1995 Article 1, paragraph (27): "Mutual funds are a forum used to collect funds from the investor community for the future invested in securities portfolio by Investment Manager." And it can be added "where the common wealth belonging to the financier will be stored and administered by the Custodian Bank". Based on the above understanding, using the term "container" explains that mutual funds are a separate form of law from Investment Manager companies or Custodian Banks. So mutual funds are not a securities company, but a legal forum to raise funds (Pandia, Ompusunggu, & Abror, 2009).

2.7 Research Framework and Hypothesis

From the theoretical foundation, previous research and the framework of thought described above, the hypotheses in this study are as follows:

H1: Inflation affects the Value of Sharia Mutual Fund Assets

H2: The rupiah exchange rate affects the value of Sharia Mutual Fund Assets

H3: Bi rate affects the Value of Sharia Mutual Fund Assets

3. Research Methods

3.1 Object of Research

This study was conducted with the aim of determining the effect between Inflation, Rupiah Exchange Rate, and BI rate on Net Asset Value (NAV). The object used is Sharia Mutual Funds registered with OJK (Financial Services Authority) and active until 2019. As of 2019, there are already 265 sharia mutual funds available at www.ojk.go.id

3.2 Research Design

This research model uses panel data regression
using E-views, linear regression describes how much the influence of the independent variable affects the dependent variable.

### 3.3 Panel Data Regression Analysis

The combination of *cross section* data and time series data will form panel data and data pool (Winarno, 2011). Panel data introduced by Howles in 1950, is cross-section data (consisting of several variables), and at the same time consists of several times, while data pools are also called panel data, except each group is separated based on its aims (Winarno, 2011).

### 3.4 Chow Test

Widarjono (2009) stated that in making decisions on hypotheses and Chow tests, it aims to determine using the best model between Common Effect Model (CEM) or Fixed Effect Model (FEM) in estimating data panel.

### 3.5 Hausman Test

Widarjono (2009) stated that the Hausman test was used to determine the best model between the fixed effect model and the random effect model. The null hypothesis of this test states that there is no correlation between individual errors and independent variables or random effect models better than fixed effect models.

### 3.6 Descriptive Statistics

Descriptive statistics provide an overview of the frequency distribution of data and basic statistical calculations, such as mean value, standard deviation, maximum, minimum, Skewness, Kurtosis, and Probability Jarque-Bera (Winarno, 2011).

### 3.7 Normality Test

Sugiyono (2017) the normality test is used to examine the normality of the variables studied whether the data is normally distributed or not.

### 3.8 Multicollinearity Test

Multicollinearity is a condition of a linear relationship between independent variables, because it involves several independent variables, then multicollinearity will not occur in simple regression equations (consisting of one dependent variable and one independent variable) (Winarno, 2011).

### 3.9 Heterokedasticity Test

Heteroscedasticity aims to test whether in the regression model there is an inequality of variance from the residual of one observation to another or referred to as unequal or non-constant variance, if the variance from the residual of one observation to another observation is fixed, then it is called Homoscedasticity and if different it is called Heteroscedasticity (Gujarati, 2010).

### 3.10 Autocorrelation Test

Autocorrelation is the relationship between the residual of one observation with the residual of other observations, autocorrelation is easier to arise in time-series data, because based on its nature, current data is influenced by data in previous times (Winarno, 2011). Autocorrelation can be identified by performing the Durbin-Watson Test.

### 3.11 Hypothesis Test (t-test)

The t test is a test performed to determine how influential the independent variable is individually or partially affected the dependent variable. This is done by comparing the calculated t-value with the table t value or by looking at the significant level value or value. This test is carried out by comparing the probability t value of each regression coefficient with a significance of $\alpha = 5$ percent or by looking at t-count (Ghozali, 2011).

### 3.12 Determination Test

The Determination Test or commonly called *Adjusted R2* shows (Winarno, 2011) (Harahap, Wiros, &, Yusuf, 2010) the ability of the model to explain the relationship between the independent variables.
variable and the dependent variable. The Adjusted R² value will always be between 0 and 1. The closer the value of R², the better the quality of the mode, because the more it can explain the relationship between the independent variable to the dependent variable. Adjusted R² expresses the proportion or percentage of the total variation of the non-free variable Y described by an explanatory variable X (Winarno, 2011).

4. Analysis and Discussion

4.1 Overview of the object of study

This study was conducted with the aim of determining the effect between Inflation, Rupiah Exchange Rate, and BI rate on Net Asset Value (NAV). As of 2019, there are already 265 sharia mutual funds available at OJK consisting.

Based on Table 1. this method is taken using Purposive sampling which is a sampling technique with certain considerations (Sugiyono, 2012). The research criteria in sampling this study are as follows:

a) Sharia mutual funds registered with OJK

b) Sharia mutual funds are mixed and have a NAV value

c) Mixed-type Islamic mutual funds were effective during the study period.

4.2 Findings and Discussion

4.2.1 Descriptive Statistics

Descriptive statistics explain the distribution of each variable contained in the study. Descriptive statistics show information related to the number of samples studied, mean value, median value, maximum value, minimum value, standard deviation in each dependent and independent variable, skewness, kurtosis, and jarque-bera.

4.2.2 Research Regression Analysis

In the previous explanation, it has been explained that in analyzing panel data, there are 3 (three) models, namely common effect, fixed effect and random effect. The three models were tested in order to choose the best model for this study using 3 tests, namely the Chow Test, the Hausman Test and the Multiple Lagrange Test.

4.2.3 Chow Test

The Chow test is conducted to find out whether the research model uses the Common Effect or Fixed Effect. The results of the Chow test are as table 2. Based on table 2 it is known that the probability of chi-square regression results from the equation with a fixed effect is 0.0000. The value is less than the significant level of 0.05. Thus H0 can be rejected or can be declared not accepted, so the temporary regression model used is the fixed effect model (FEM).

<table>
<thead>
<tr>
<th>No</th>
<th>Jenis Reksadana Syariah</th>
<th>Jumlah</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stock</td>
<td>63</td>
</tr>
<tr>
<td>2</td>
<td>Protected</td>
<td>54</td>
</tr>
<tr>
<td>3</td>
<td>Fixed Income</td>
<td>36</td>
</tr>
<tr>
<td>4</td>
<td>Mix Funds</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Capital Fund</td>
<td>54</td>
</tr>
<tr>
<td>6</td>
<td>Foreign Capital</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>Sukuk</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Indeks</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>ETF - Indeks</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>ETF - Saham</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>265</td>
</tr>
</tbody>
</table>

Source: Data processed from the page, www.ojk.go.id
### Table 2. Chow Test

Redundant Fixed Effects Tests  
Equation: Untitled  
Test cross-section fixed effects

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>53.584132</td>
<td>(14,57)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>198.786957</td>
<td>14</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Source: Data Processed (2020)

### Table 3. Hausman Test

Correlated Random Effects - Hausman Test  
Equation: Untitled  
Test cross-section random effects

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>0.000000</td>
<td>3</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: Data Processed (2020)

![Figure 2. Normality Test Results](source)

#### Series: Residuals  
Sample 1 75  
Observations 75

- Mean: 5.06e-16  
- Median: -0.011242  
- Maximum: 0.216684  
- Minimum: -0.461060  
- Std. Dev.: 0.169758  
- Skewness: -0.455631  
- Kurtosis: 2.587684

- Jarque-Bera: 3.126254  
- Probability: 0.209480

### 4.2.4 Uji Hausman Test

The Hausman test was conducted to find out whether the research model used *Fixed Effect or Random Effect*. The results of the *Hausman* test are as Table 3.

Based on Table 3, it is known that the probability of *random cross section* is 1,000. This probability value is higher than the Cross-section Random limitation criterion of 0.05 (Widarjono, 2009). Thus the hypothesis is acceptable, so it is said that the results of the regression equation in this study use a *random effect model* (REM). Because the Chow test obtained FEM results and the REM results were obtained in the Hausman test, there are differences in methods. For this reason, a *lagrange* test is carried out to determine the regression model
4.2.5 Classical Assumption Test

This study used panel data regression analysis. Before conducting regression analysis, it is necessary to first conduct a classical assumption test consisting of 3 assumptions, namely the multicollinearity test, the autocorrelation test and the heteroscedasticity test. Classical assumption testing is needed to find out whether the regression model used can produce good estimator results.

4.2.6 Normality Test

The Normality Test is carried out on the results of equation regression in this study the normality test aims to find out whether the residual results of the regression of the equation are normally distributed or not, because normally distributed data is one of the requirements for conducting panel data regression analysis techniques. The normality test results are presented in the following figure 2.

4.2.7 Multicollinearity Test

In conducting multiple linear regression analysis, there is a requirement that fellow independent variables must not have a significant relationship. This test of fellow independent variables is also called the multicollinearity test. If there is a high correlation between independent variables, then one of the variables is eliminated (excluded). To detect the presence or absence of multicollinearity by looking at the value of variance inflation factor (VIF), with the value of VIF should not be more than 10.

4.2.8 Autocorrelation Test

Autocorrelation shows that there is a correlation between previous period errors which in classical assumptions should not occur. In this study, the first autocorrelation test was carried out by looking at Durbin-Watson on the equation of the Random Effect Model (REM) Stat model on the results of the regression estimation used.

Table 4 shows that the DW value is 1.870142. This test uses a significant of 0.05 (5%) with 75 observations (n) 3 independent variables (k) so that dL = 1.5360 and dU = 1.7067 will be obtained as seen from the DW table.

4.2.9 Heteroskedasticity Test

This test aims to determine whether the residual variance structure model is homoscedasticity or heteroscedasticity. The test is carried out using the White Test where heteroscedastic will be detected if the probability value is smaller than α (0.05).

4.2.10 Regression Analysis

After previous testing, it was found that the best model used in this study was the random effect. Furthermore, the table below is the result of regression panel data with a random effect model where the dependent variable is NAV and the independent variables are Inflation, NTR (rupiah exchange rate), and BIRA (BI Rate). By analyzing the regression results, it will be known that the independent variable is significant affecting the dependent variable.
4.3 Hypothesis Test Results (Probability Test/Significance Test)

The hypothesis test is carried out with a significance test to find out how much the independent variable affects the dependent variable. The results of this test determine the decision taken from the hypothesis proposed in this study. The test was carried out by comparing the probability value of each variable contained in Table 5 with a value of $\alpha=0.05$. If the probability value is $<\alpha$ then H0 is rejected and all Hypothesis are accepted which means the independent variable have effect on the dependent variables.

4.4 Coefficient of Determination

Based on Table 5 above, the Adjusted $R^2$ result in this study is 0.0746. This figure exceeds 0 but is not close to 1 so that it can be concluded that Inflation, Rupiah Exchange Rate and BI Rate affect profitability by 0.268417 or 7.46%. The remaining 92.54% was influenced by other variables that were not used in this study.

4.5 Discussion

4.5.1 The Effect of Inflation on Net Asset Value

Inflation in this study has a positive influence. This means that when there is an increase in inflation, it will make companies not make efficient operational costs. This makes the company's performance increase, so that the value of mutual funds will also increase and cause the Net Asset Value (NAV) to increase. An increase in the inflation rate causes consumer purchasing power to decrease as all prices of goods increase, while consumer income is fixed. When viewed from the capital market sector, when high inflation causes
high interest rates, this allows investors to shift investment to the money market. By selling the mutual fund, it causes the price of the mutual fund to decrease, and the Net Asset Value (NAV) also decreases.

4.5.2 The Effect of Rupiah Exchange Rate on Net Asset Value

Based on the results of the analysis and discussion entitled Analysis of the Effect of Inflation, Rupiah Exchange Rate and BI Rate on the Net Asset Value of Sharia Mutual Funds for the 2015-2019 period, the results showed that inflation had a positive and significant effect on the NAV of Sharia Mutual Funds. Therefore, when there is an increase in inflation, it will make companies not make efficient operational costs. This makes the company's performance increase, so that the value of mutual funds will also increase and cause the Net Asset Value (NAV) to increase. An increase in the inflation rate causes consumer purchasing power to decrease as all prices of goods increase, while consumer income is fixed.

The results showed that the rupiah exchange rate had a significant positive effect on the NAV of Sharia Mutual Funds. Therefore, the increasing rupiah exchange rate against foreign currencies makes investors confident that the performance of issuers can develop well. In addition, investors will be confident that the rupiah will always be stable, thus making investors believe in the Indonesian capital market.

The results showed that the BI Rate had a significant negative effect on the NAV of Sharia Mutual Funds. Therefore, the results of this study can strengthen investment when the BI Rate decreases so that all investment is diverted to the capital market. Along with that, the company's performance will increase so that the value of shares also increases, this has an impact on Net Asset Value (NAV) also increases.

5. Conclusions

This study aims to determine the effect of Inflation, Rupiah Exchange Rate and BI Rate on the Net Asset Value (NAV) of Sharia Mutual Funds of mixed mutual funds registered with OJK during the 2015-2019 period. This study used 15 mutual fund companies. Based on this analysis, the following conclusions can be drawn:

a) Inflation has a negative and significant effect on the Net Asset Value of Sharia Mutual Funds in Indonesia for the 2015-2019 period.

b) The Rupiah Exchange Rate has a negative and significant effect on the Net Asset Value (NAV) of Sharia Mutual Funds in Indonesia for the 2015-2019 period.

c) The BI Rate has a positive and significant effect on the Net Asset Value (NAV) of Sharia Mutual Funds in Indonesia for the 2015-2019 period.

5.1 Suggestion

Based on the research that has been done, the suggestions that can be proposed in this study are as follows:

a) Researchers can then continue this research with the object of research not from the Net Asset value of sharia mixed mutual funds but can take other types of sharia mutual funds. And researchers can then add other variables that affect the Net Asset Value of Sharia Mutual Funds in addition to Inflation, Rupiah Exchange Rate, and BI Rate.

b) Investment managers are advised to keep a close eye on macroeconomic factors such as inflation, the Rupiah exchange rate, and the BI Rate. So that investing in sharia mutual funds can contribute maximum profit.
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