

# Analysis of Macroeconomics Factor Affecting Jakarta Islamic Index

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# Analysis of Macroeconomics Factor Affecting Jakarta Islamic Index

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**Keywords:** Jakarta Islamic Index, Macroeconomics, Multiple Linear Regression.

**Abstract:** The goal of this study was to propose analyzing the influence of macroeconomics factor to Jakarta Islamic Index. The macroeconomics factors consist of inflation, BI rate, exchange rate IDR/USD, and Gross Domestic Product (GDP). The observation data concerned were obtained during April, 2016 to June, 2019 (in total 39 monthly observation data). The multiple linear regression model is applied to analyze the relation between independent variable (inflation, BI rate, exchange rate IDR/USD, and Gross Domestic Product) and dependent variable which is Jakarta Islamic Index (JII). The results explained that the independent variables are significant except inflation.

## 1 INTRODUCTION

### 1.1 Research Background

According to (Huang et al., 2008), there are two groups in economic theory which are microeconomics and macroeconomics. Macroeconomics focuses on wide combination of actions (population agents), instead of personal behaviour (a single agent). A macroeconomic variable is a guiding monetary, natural, or geopolitical event that give large impact in local or national economy. Macroeconomic factors give effect broadly to windrows of groups, rather than selected persons. The examples of macroeconomic factors are economic outputs, unemployment rates, and inflation. The governments, businesses and consumers attentively controlled the barometer of economic accomplishment. A macroeconomic factor contain the trend of a particular large-scale market. For example, fiscal policy and numerous regulations influence state and national economies, while powerful bring about broader international implications.

Based on (Masrizal, Mustofa and Herianingrum, 2019), Indonesia is the largest Muslim countries which represents prospect market for expanding sharia financial industry. Further, sharia investment has an crucial task to enhance the Islamic finance industry in Indonesia. Jakarta Islamic Index (JII) is the measuring instruments of performance for Sharia capital market in Indonesia which was established in

July 2000. According to (Sakti and Yousuf, 2013), Jakarta Stock Exchange Islamic Index (JII) is sharia stock market index which has companies members in the under provisions of Islamic stocks regulated by National Sharia Board. One of the most favored sectors of sharia investment is to invest in stocks belonging to the JII. The issue listed in JII conducts its business activities that are not contrary to the principles of sharia. Shares listed in the JII consist of 30 most liquid stocks selected from Islamic compliance shares. According to (Sakti and Yousuf, 2013), the dynamic linkage between macroeconomic factors and stock returns is well proposed theory in financial economics literature. As stated in the stock evaluation model, macroeconomic factors might have organized relationship on stock prices especially in influence on discounted future cash flows.

The aim of this paper is to analyse the influence further to the Jakarta Islamic Index and macroeconomic linkages for developing economies. The variables included are exchange rate, inflation, gross domestic product, and BI rate as being important in explaining Jakarta Islamic Index. Our analysis, hence, might be further collecting our understanding of the Indonesian Islamic equity market behavior and its relations with various components of macroeconomic variables. Therefore, this research attend to complete this gap by analyzing the influence of macroeconomic factors toward Islamic stock prices in Indonesia.

## 1.2 Objectives

The study aims at analyzing how macroeconomic variables influence the stock markets index by using Jakarta Islamic Index as a case study.

## 2 LITERATURE REVIEW

There are many methods that have been applied in examining macroeconomic indicators to stock market index. This section brings us to the adaptable literature for this study which were reviewed and based on the relevance of using any methods to examine macroeconomic indicators to stock market index.

According to (Ibrahim and Agbaje, 2018), it had been examined the relationships between stock returns (monthly data of the Nigerian Stock Exchange and Nigerian Consumers Price Index ) and Nigeria inflation. According to (Alam and Uddin, 2009), due to monthly data during January 1988 to March 2003, the study had conducted to explore the entity efficiency of share market efficiency and represent the relationship between stock index and interest rate for fifteen developed and developing countries.

According to (Galí and Gambetti, 2015), VAR is being as tool to predict the response of stock prices to monetary policy shocks. According to (Zhao, 2010), likelihood ratio statistic is used as tool to observe the cross-volatility effects between foreign exchange and stock markets. According to (Kurihara, 2006), this paper investigates the effect macroeconomic factors of stock prices. According to (Rjoub, Tu'rsay and Gu'nsel, 2009), the six pre-specified macroeconomic variables which are the term structure of interest rate, unanticipated inflation, risk premium, exchange rate and money supply had been analyzed in this study.

## 3 METHODOLOGY

### 3.1 Data

The observations data considered in this study is contained of Jakarta Islamic Index (JII) as showed in Figure 1, inflation as showed in Figure 2, BI rate as showed in Figure 3, exchange rate IDR/USD as showed in Figure 4, and Gross Domestic Product (GDP) as showed in Figure 5. All of data are collected during April, 2016 to June, 2019 (in total 39 monthly observation data).

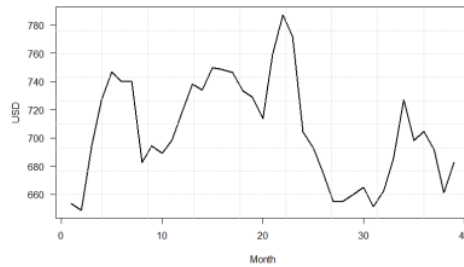


Figure 1: The Jakarta Islamic Index time series plot.

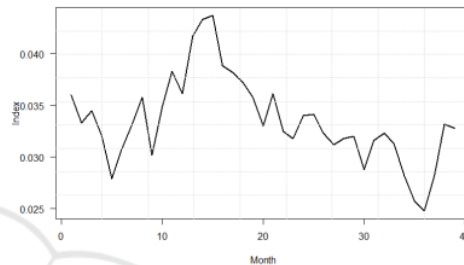


Figure 2: The inflation rate time series plot.

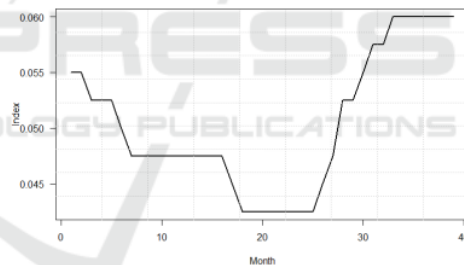


Figure 3: The BI rate time series plot.

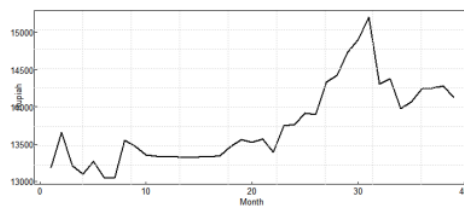


Figure 4: The exchange rate IDR/USD time series plot.

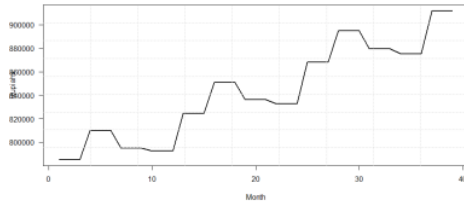


Figure 5: The Gross Domestic Product (GDP) time series plot.

### 3.2 Method of Estimation Technique

There are various research hypotheses considered in conditional relationship which is the effect between single predictor with other factors. Such relations are commonly evaluated as multiplicative interactions and can be fitted in both fixed- and random-effects regression. The most common method for probing interactions is to test simple slopes at specific levels of the predictors for example multiple linear regression.

The purpose of multiple regression is to construct the relationship of the outcome with all of determinants. The multiple regression equation is constructed in equation (1) as follows

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n + e \quad (1)$$

where,

$Y$  is the outcome variable,

$b_0$  is the intercept,

$b_1, b_2, \dots, b_n$  are the regression coefficient in each independent variable,

$X_1, X_2, \dots, X_n$  are independent variables

$e$  is error term.

After fitting the linear model, the normality assumption of residuals is required for evaluating the goodness of fit the model.

## 4 RESULT AND ANALYSIS

The stepwise procedure of multiple linear regression to analyze macroeconomics factor affecting Jakarta Islamic Index (JII) is presented as:

1. Defining the dependent and independent variables

The path diagram is represented in Figure 6 which show the outcome and determinants. The outcome is Jakarta Islamic Index (JII) and multiple linear regression will be used to analyze

the correlation of all determinants with Jakarta Islamic Index (JII).

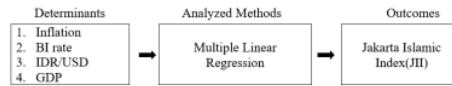


Figure 6: The study path diagram.

2. Checking the normality distribution  
Multiple linear regression has assumption that the dependent variable satisfied the normality distribution. Saphiro-Wilk normality test can be a tool to check the normality distribution. Since p-value  $0.1577 > 0.05$ , it means that the dependent variable fulfill the assumption of multiple linear regression.

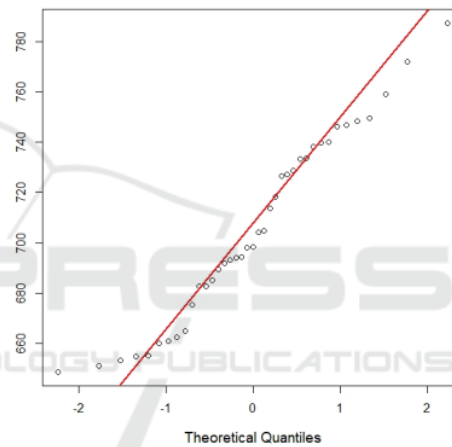


Figure 7: The Q-Q plot.

The Q-Q plot is being as a tool to check the normality distribution by visual. And Figure 7 shows the Q-Q plot, the dot group follow the red line so it indicate that the dependent variable is acceptable in normally distribution.

3. Building model

Multiple linear regression model of Jakarta Islamic Index (JII) was identified using four predictors where all were time series. The model were able to estimate JII up to 57% with very small p-value. Four time series data had vary performances since three of four determinants indicating high significances level precisely BI rate, PDB and exchange rate. Exchange rate seem negatively influenced JII more than others while exchange rate increased then JII would decreased where this effect was likely BI rate toward JII. Contrary with PDB, it had positive impact to JII.

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Residuals:
    Min       1Q   Median       3Q      Max
-47.246 -15.106  -2.561  17.549  52.350

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.333e+03  1.435e+02   9.284 7.55e-11 ***
Inflation    -1.356e+03  1.206e+03  -1.124  0.26878
BI.Rate      -2.142e+03  8.380e+02  -2.556  0.01523 *
PDB          5.572e-04  1.782e-04   3.127  0.00361 **
IDR_USD      -6.861e-02  1.406e-02  -4.880 2.46e-05 ***
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 25.65 on 34 degrees of freedom
Multiple R-squared:  0.575,    Adjusted R-squared:  0.525
F-statistic: 11.5 on 4 and 34 Df, p-value: 5.192e-06

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Figure 8: The multiple linear regression results.

Based on model summary, the multiple linear regression model well fitted to JII with three significant predictors. Moreover, residual of model was depicted in Figure 9, where residuals fit to linear line depicted by Q-Q plot.

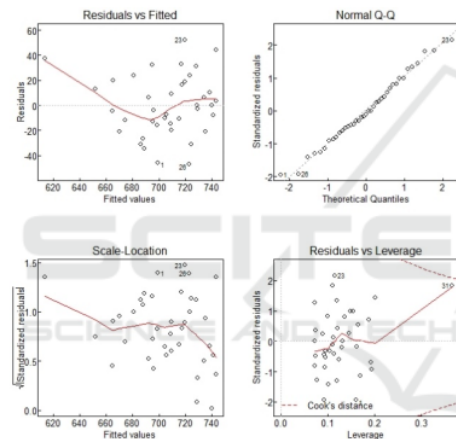


Figure 9: The model residuals plot.

## 5 CONCLUSIONS AND RECOMMENDATION

### 5.1 Conclusions

The aim of this study was to analyse the influence of macroeconomics factor to Jakarta Islamic Index. The multiple linear regression method is applied to analyse the relation between independent variable (inflation, BI rate, exchange rate IDR/USD, and Gross Domestic Product) and dependent variable which is Jakarta Islamic Index. The results explained that the independent variables are all significant except inflation. It means that BI rate, exchange rate

IDR/USD, and Gross Domestic Product has possibility to give influence on Jakarta Islamic Index.

### 5.2 Recommendation

In this study, it may consider the independent variables which are inflation, BI rate, exchange rate IDR/USD, and Gross Domestic Product. It also can be investigated to other macroeconomics factors, for example economic growth (index of industrial production), oil price, etc. Nowadays, there are various statistical which can be as tool to analyze for example Vector Auto Regression (VAR), multivariate co-integration, Autoregressive Distributed Lag (ARDL), etc.

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