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Impact of Macroeconomic Factors on the Market Performance of Indonesia Sharia Stocks

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Abstract

This paper presents a studied on the impact of macroeconomic factors that is shown by the market performance of Indonesia sharia stocks (JII). The macroeconomic factors are the regional and global market indexes, oil price, the FED rate, and the US$ exchange rate. On the other hand, regional markets considered in this paper are Singapore and Malaysia the global markets considered in this paper are Hong Kong, Japan, and the United States of America. For this purpose, we have used global data from the period of 2009-2019. This paper's main contribution is the use of principal component analysis (PCA) to reduce the independent variables. Based on the PCA, it is found that the macroeconomic factors can be simplified into two factors, namely regional and global factors. Moreover, it is found that the oil price, the FED rate, and the US$ exchange rate have no effect on the sharia stock performance. Based on the regression analysis, it is found that these two factors have a positive impact with a significant level of 24.2%. It is also found that the global factor has a greater effect than the regional factor.

Keywords: *Market index, sharia stocks, macroeconomics, JII*

INTRODUCTION

In introduction, Authors should state the objectives of the work at the end of introduction section. Before the objective, Authors should provide an adequate background, and very short literature survey in order to record the existing solutions/method, to show which is the best of previous researches, to show the main limitation of the previous researches, to show what do you hope to achieve (to solve the limitation), and to show the scientific merit or novelties of the paper.

Indonesia is a country with Islam as the most dominant religion. For this reason, many Islamic financial institutions have been established in Indonesia, including Islamic banks, insurances, and stock exchanges. The Islamic capital market in Indonesia has grown significantly in the last ten years. From 2011 to 2020, the issuers have increased from 237 to 451, that represents more than 60 percent of total issuers in the Indonesia Stock Exchanges (IDX). The market size of the Islamic shares is about 51% of the total market size. Moreover, the trading frequency of the Islamic shares is about 62%, with the trading value about 54% compared to the total market ones (Nur Qolbi & Wahyu T.Rahmawati, 2020).

Figure 1 shows the Jakarta Islamic Index (JII) from January 2009 up to December 2019. In ten years, the JII index growth is 227% or about one percent per month. This significant growth shows that the Indonesia sharia stocks are very attractive in terms of return. However, as the investors are not limited to Islam investors, the sharia stock behaviors can be no different to non-sharia stock

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behavior. Moreover, most of the active investors are foreign investors and, therefore, the sharia stock behaviors may strongly be affected by global macroeconomic factors.

Many factors have to be taken into account to determine the value of an asset. Different investors have different preferences in the valuing of these factors. In addition to the local or regional factors, global factors have a strong impact on asset pricing. Asset pricing in the Indonesia Stock Exchanges has different characteristics compared to the developed countries because the majority of the active investors are still foreign investors. Macroeconomic factors that are considered important by foreign investors can be totally different compared to the local investors.

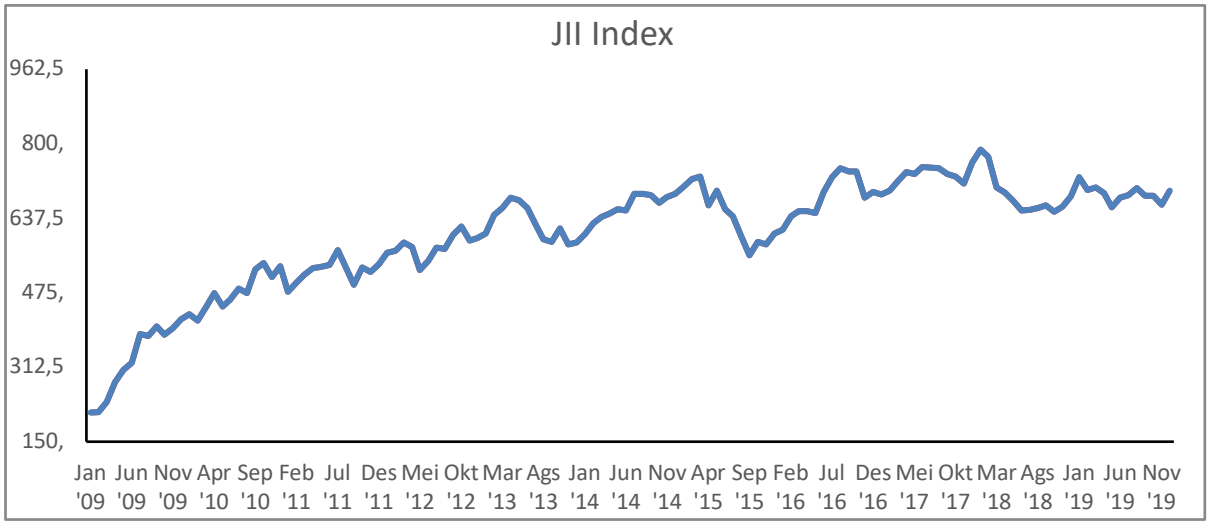


Figure 1. JII index from 2009 to 2019.

This paper presents a study on the impacts of macroeconomic factors on the market performance of Indonesia Sharia Stocks that are listed in the JII. The research question is what main macroeconomic factors that strongly affect the performance of Indonesia sharia stock market. The considered macroeconomic factors are oil price, the FED rate, US$ exchange rate, and regional and global markets. The considered regional market is the Singapore and Malaysia stock market indexes. On the other hand, the considered global market is the Hong Kong, Japan, and US market indexes. The main contribution of this paper is the use of Principal Component Analysis (PCA) to reduce the number of independent variables. Data analysis has shown that the macroeconomic factors other than market indexes have no significant effect on the Sharia stock performance. Data analysis has also shown that the macroeconomic factors can be grouped into the regional and global macroeconomic market factors. For the data in the period of 2009-2019, it is found that these two macroeconomic market factors have a strong positive impact on the average returns.

LITERATURE REVIEW

If a perfect diversification can be done, the non-systemic risks can be eliminated and, therefore, just the systemic risks are faced by the investor. Though the same risks are faced, the investor reaction can be different. The investor reaction differs from each other because each investor has different preferences and information. Some investors take into account the global factors but

ISSN 2807-2049 (Online) | 2807-2057 (Print)

some are just local factors. One possible reason why macroeconomic factors are faced differently is the religion of the investor. Though the risk is high, it is possible that an investor still prefers a sharia stock than non-sharia stock. Similarly, the stock performance is affected by various macroeconomic factors, both regionally and globally. Though all stocks are exposed to those macroeconomic risks, each stock behaves differently to various macroeconomic changes. Each stock response differently because the fundamental of each issuer is different.

The first theory on asset pricing is the one that is published by (Sharpe, 1964) and (Lintner, 1965). In this theory, it is shown that under perfect diversification, the remaining risk is just the market risk. Though this theory received many critiques, this theory is still the most common theory that is given in many university courses. The critiques are mostly on the low explanatory power of beta (market risk) in the asset pricing. Various methods to improve the accuracy of the original capital asset pricing model have also been proposed. In 1986, (Amihud & Mendelson, 1986) has taken into account the liquidity in the capital asset pricing model. In 1992, (Fama & French, 1992) took into account the company size and book-to-market value to improve the model. In 1976, Ross proposed the arbitrage pricing theory that takes into account various systemic risks in the asset pricing. The common risk that is taken into account is not just the market risk. The last Nobel recipients are the one based on prospect theory or behavioral finance (Kahneman & Tverrsky, 1979; Shiller, 2003). In this concept, the human nature of investors is taken into account in the capital asset pricing.

Following the publication of the Arbitrage Pricing Theory / APT (Ross, 1976), a lot of work on macroeconomic factor impacts on the stock performance was published. Various macroeconomic factors have been investigated. For example, it was found that the oil price has a significantly long and short-run negative effect on stock prices in the Jordan Capital Market (Hammami et al., 2019) and the Africa Capital Market (Kelikume & Muritala, 2019). However, it is found that the oil prices have a positive and significant relationship in Islamic share price in Malaysia (Yahya et al., 2012) and the Canadian capital market (Alzyoud et al., 2018).

The US exchange rate has a significant negative effect on stock prices only in the short term in Jordan Capital Market (Hammami et al., 2019) and in the Malaysia stock market (Yahya et al., 2012), but has a positive and significant impact on the Canadian stock market returns (Alzyoud et al., 2018).

Various studies on the relationships among many stock markets were also published. Relationship between Malaysian and the Philippines stock markets as well as between Malaysian and the United States stock markets for a period before the financial crisis were published (Karim et al., 2017). Relationships among Singapore, Taiwan, Korea, Japan, and Indonesia stock markets have also been reported (Aminda, 2019)

A study on the impact of the US$ exchange rate on the Indonesia stock market performance has also been published (Anantayoga et al., 2014). Meanwhile, other research shows that the rupiah exchange rate against the dollar has no effect and only GDP growth and the Dow Jones index have an effect on the JCI (Handayani & Oktavia, 2018). The results of other studies indicate that the Dow Jones index, FTSE100, Hang Seng, Money Supply, and Net Export have no effect on the Composite Stock Price Index. Meanwhile, NIKKEI 225, KOSPI, and gold have a positive relationship with the Composite Stock Price Index (Kusumawati & Asandimitra, 2017). Asian regional stock indices, NIKKEI 225 Index (Japan), KOSPI Index (South Korea), and Kuala Lumpur Stock Exchange Index (Malaysia) have a positive and significant effect on the Jakarta Composite Index (Widodo, 2018). A

ISSN 2807-2049 (Online) | 2807-2057 (Print)

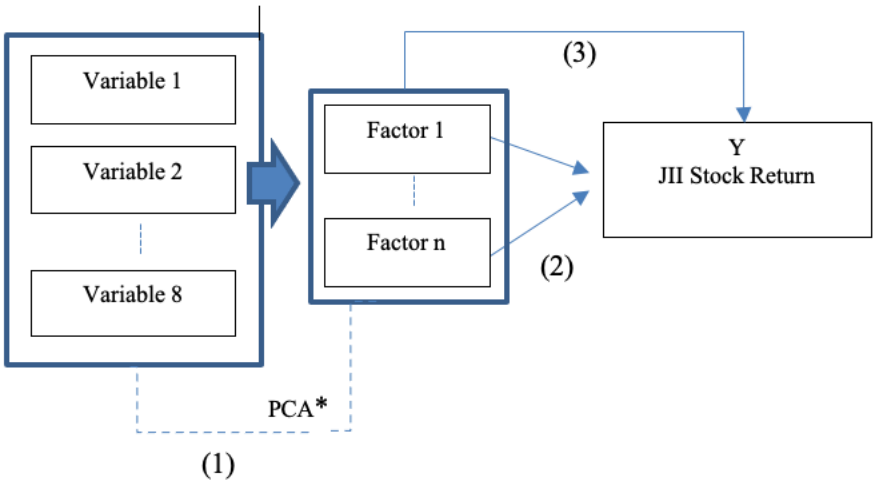
study on the predictability of Islamic stock predictability in many countries was also conducted (Narayan et al., 2016). It was found out that the performance of the US stock exchange has a strong impact on the performances of Islamic stocks in many countries.

Though a lot of work has been done, the results show that there are inconsistent and, therefore, no general conclusion can be drawn. Specifically, it is found that no works on the impacts of macroeconomic factors on the Indonesia Sharia Stocks. It is considered important because the market size of sharia stocks is growing significantly in the last ten years.

RESEARCH METHOD

This study uses a descriptive analysis approach and verification. At first, many macroeconomic factors that are considered important in asset pricing were selected, and the data were collected. In this paper, eight macroeconomic factors are used. In general, the considered macroeconomic factors can be classified as market factors and nonmarket factors. The nonmarket factors are international oil price, the FED rate, and the US$ exchange rate. The market factors are the stock market indexes in Singapore (SGP), Malaysia (MYS), Hong Kong (HKG), Japan (JPM), and the United States of America (USA). This research used global data from the period of 2009-2019. We have used the brent oil price as the reference.

By using the Principal Component Analysis (PCA), the most influential factors are determined. The causal model developed in this study is presented in Figure 2:



Note:
(1) PCA will be used to simplify or reduce the eight variables into several main factors/components
(2) is the partial influence of each factor on Y
(3) is the simultaneous influence of the factors on Y

Figure 2. Causal Model of Macroeconomic Factors and JII Stock Performance

Principal Component Analysis

The PCA method aims to simplify the observed variables by reducing their dimensions. This is done by eliminating the correlation between the independent variables by transforming the original independent variable into a new variable that is not correlated. After several components of PCA results that are free of multicollinearity are obtained, these components become new

ISSN 2807-2049 (Online) | 2807-2057 (Print)

independent variables that will be regressed or analyzed for their effects on dependent variables (Y) (Mashadi, 2018).

Whether or not factor analysis is appropriate, it is initially necessary to carry out the Kaiser-Meyer-Olkin (KMO) test and the Barlett Test. If the KMO value ranges from 0.5 to 1, then factor analysis is appropriate. However, if the KMO value is less than 0.5, then the factor analysis is not feasible. Meanwhile, the Barlett Test is used to test whether the variables involved are correlated.

Several other PCA tests

MSA or Measure of Sampling Adequacy.

The MSA numbers range from 0 to 1, with the following criteria:

- MSA = 1, the variable can be predicted without error by other variables.
- MSA> 0.5, the variable can still be predicted and can be analyzed further.
- MSA<0.5, the variable cannot be predicted and cannot be analyzed further or excluded from other variables.

Communalities. Communalities show how much variance can be explained by the formed factors.

Total Variance Explained. The ability of each factor to represent the analyzed variable is indicated by the amount of variance described, which is called an eigenvalue. Eigenvalues are a special set of scalars associated with a linear system of equations (i.e., a matrix equation) that are sometimes also known as characteristic roots, characteristic values (Hoffman & Kunze, 1971), proper values, latent value or latent roots (Marcus & Minc, 1988). Eigenvalue shows the relative importance of each element in calculating the variance of the analyzed variables. Eigenvalue numbers below one are not used in calculating the number of factors formed.

Matrix Components. The matrix component is a table that contains the loading factor (correlation value) between the analysis variables and the formed factors. It also describes how well the variables are grouped into certain factors/components.

FINDINGS AND DISCUSSION

Point 1

Based on the results of empirical studies, it is found that several macro factors are estimated to have an influence on stock prices, namely the Rupiah exchange rate against the US dollar, the FED interest rate, the world oil price, the regional market factors, which consists of Malaysia (MYS) and Singapore (SGP) capital market indices and the global market factors that consist of the Hong Kong (HKG), United States of America (USA), and Japan (JPM) capital market indices. Descriptive data of macro factors are presented in Table 1.

Stock exchanges in the USA provide an average monthly return of 0.9%, the largest compared to other stock exchanges in this study. Meanwhile, the most significant variation or fluctuation in the average monthly return is the Hong Kong stock exchange of 5.45%. This shows that the Hong Kong stock market investment is relatively riskier compared to the Malaysia and Singapore stock exchanges, which offer almost the same return. This result is important to an investor to decide on investment portfolio.

ISSN 2807-2049 (Online) | 2807-2057 (Print)

Table 1.
Descriptive Analysis

Descriptive Statistics					
Factor	N	Minimum	Maximum	Mean	Std. Deviation
Exchange Rate	132	-.066759517600000	.069879431000000	.002282479530000	.019169863700000
The FED	132	-.921875000000000	1.000000000000000	.021299226300000	.177078203000000
HKG	132	-.143290042000000	.170737158000000	.006581942060000	.054576242700000
USA	132	-.117228648000000	.095445224100000	.009696059090000	.038066274400000
MYS	132	-.271607925000000	.348846517000000	.005630000480000	.047923163700000
JPM	132	-.116546399000000	.128498660000000	.008799718570000	.051665132600000
SGP	132	-.195458650000000	.212885621000000	.005771683480000	.054274003700000
Oil Price	132	-.220180677000000	.297143975000000	.006062785140000	.085930633900000

Fulfilment of PCA assumptions

The process of forming the main components requires several stages and repetition of the process until the primary component model is included that meets the PCA assumptions. The initial analysis uses eight external variables as shown in Table 1, which are thought to be related to stock returns. After going through the necessary stages and adjustments, only five variables (HKG, USA, MYS, JPM, SGP) are obtained, which form the two main components that meet the PCA assumption.

ISSN 2807-2049 (Online) | 2807-2057 (Print)

Table 2.
Recapitulation of PCA process results

	8 Variables	6 Variables	5 Variables
Fulfilment of PCA Assumptions	▪ *KMO – measure =0,772* ▪ *Barlett Test = 226* **Fulfilment of PCA assumption**	▪ *KMO – measure = 0,753* ▪ *Barlett Test =193* **Fulfilment of PCA assumption**	▪ *KMO – measure = 0,694* *Barlett Test =157,86* **Fulfilment of PCA assumption**
Anti Image Correlation	Min = 0,531 Max = 0,854	Min = 0,654 Max = 0,841	Min = 0.607 Max = 0.727
Communalities	Min = 0,194 Max = 0,755	Min = 0,436 Max = 0,761	Min = 0.615 Max = 0.796
Factors formed and variations explained	Factor 1: 5 variables (35,7%) Factor 2: 3 variables (14,93%)	Factor 1: 4 variables (43,64%) Factor 2: 2 variables (18,91%)	Factor 1: 3 variables (46,1%) Faktor 2: 2 variables (22,55%)
Eigen Value Cumulative	50,6 %	62,55 %	68.74 %
Notes for the change	*The variables FED and exchange rate are omitted (communalities <0.5)*	The variable *Oil Price is forgotten (communalities < 0.5)*	

The commonality value shows how much a variable can explain the factor. The US capital market variable, for example, has the most significant value of commonalities, namely 0.796, which means that this variable can explain the factor of 79.6%. The FED, exchange rate, and oil price variables were eliminated because of the low value of communality (<0.5) so that they were only able to explain variations in the low factor, thus making the eigenvalues low (see Table 2). After the variable is removed, the eigenvalue increases to 68.74%, which means that the two factors formed can explain the variations in the model by 68.74%

The results of the iteration process on five variables indicate that all assumptions in PCA have been fulfilled, so that we got two components or factors that represent the five variables, as shown in Table 3. This result is important to determine which market index is the most influential factor in the performance of the Indonesia sharia stocks.

ISSN 2807-2049 (Online) | 2807-2057 (Print)

Table 3.
Component Matric

	Component	
	1	2
HKG	.813	.258
USA	.889	.078
MYS	.028	.763
JPM	.845	-.036
SGP	.127	.774

The details of the variables that make up these two factors (Table 3), namely those that have the most significant correlation value for each variable on these two factors, are:

1) Factor 1 consists of the capital markets of Hong Kong, the USA, and Japan which can be generalized to be global market factors
2) Factor 2 consists of Malaysia and Singapore capital market indexes which can be generalized as the regional market factor

The results of this new factor or variable are regional and global market factors which are predicted to have an influence on stock the Indonesia sharia stocks performance, especially those who are listed on the Jakarta Islamic Index (JII). Further test results with regression gave the following model (return as a function of global and regional market factors:

$$Y = 0{,}010 + 0{,}022X_1 + 0{,}009X_2 \qquad (1)$$
$$(0{,}006)\ ** \quad (0{,}000)*** \quad (0{,}018)*$$

*significant at α ≤ 5%, and **significant at α ≤ 1%, and *** significant at α ≤ 0.1%

where Y is the JII stock performance (that is measured by the return), X_1 is the global market factor, and X_2 is the regional market factor.

This result shows that global and regional market factors have a positive and significant impact on the Indonesia sharia stock market, both partially and simultaneously, with a significant level of less than 5%.

The R Square of the above regression model is 0.242; this means that the contribution of X_1 and X_2 is 24.2%. Thus, the rest, 75.8%, represents other factors outside of the considered macroeconomic factors. The resulted in R Square for the obtained models is acceptable as, according to extensive literature review, the common value of the R square of the asset pricing model is about 20% (Bali et al., 2016). Based on the above results, it can be seen that, in general, X_1 and X_2 factors have positive and significant effects on the stock returns of JII. Based on the above regression coefficients, it can be seen that the global market factor has a greater impact than the regional market factor.

ISSN 2807-2049 (Online) | 2807-2057 (Print)

DISCUSSION

The results of this study show that the global market factor, namely the Hong Kong, USA, and Japan capital market indexes, has a positive and significant impact on the Indonesia sharia stock market. The impact is more significant compared to the regional market factor, which represents the Malaysia and Singapore market indexes. These results are similar to the previous research results (Aminda, 2019), (Handayani & Oktavia, 2018) and (Majid, 2018). The results that show other macroeconomic factors other than capital market factors have no significant effects on the market performance are surprising. By applying the principal component analysis, however, we can determine exactly which factors are really significant. Moreover, by using the principal component analysis, we can reduce the number of independent variables and, therefore, a deeper insight can be obtained. The result that shows the global market factor has a stronger impact on the Indonesia sharia stocks is in line with the result of many studies in various countries (Narayan et al., 2016). The results, however, have shown that the sharia stock performance is almost no different from the non-sharia stock performance. This phenomenon needs further research to investigate the reason.

CONCLUSION

This paper presents a study on the impacts of various macroeconomic factors on the market performance of the Indonesia sharia stocks that are listed in the Indonesia Stock Exchanges. By using the principal component analysis, it is found that the most important macroeconomic factors are the ones that are related to the capital market indexes. Based on the principal component analysis, the considered capital market indexes can be grouped into the regional market factor and the global market factor. The global market factor has a stronger impact than the regional market factor.

For further research, it is recommended to take into account other macroeconomic factors such as gold price, Bitcoin, Sukuk (sharia bond), and other investment alternatives. Moreover, it is important to compare the sharia stock performances of many Islamic countries. Further investigation about the differences and similarities of sharia and non-sharia stocks has to be done.

REFERENCES

Alzyoud, H., Wang, E. Z., & Basso, M. G. (2018). *Dynamics of Canadian Oil Price and its Impact on Exchange Rate and Stock Market*. *8*(3), 107–114.

Amihud, Y., & Mendelson, H. (1986). Asset pricing aivd the bid-ask spread*. *JOurnal of Financial Economics*, *17*, 223–249.

Aminda, R. S. (2019). *Analisis Kointegrasi Pasar Saham ASIA-7 dan Implikasinya terhadap Pengelolaan Portofolio Internasional*. *2*(1), 114–124.

Anantayoga, I. G., Anantayoga, I. G. W., Achsani, N. A., & Maulana, T. N. A. (2014). PENGGUNAAN ARBITRAGE PRICING THEORY DALAM MENGUKUR RETURN KELOMPOK SAHAM SEKTORAL. *Widyariset*, *17*(1), 115–124. https://doi.org/10.14203/widyariset.17.1.2014.115-124

Bali, T. G., Engle, R. F., & Murray, S. (2016). *Empirical Asset Pricing, The Cross-Section of Stock Returns*. John Wiley & Sons, Inc.

ISSN 2807-2049 (Online) | 2807-2057 (Print)

FAMA, E. F., & FRENCH, K. R. (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance*, *47*(2), 427–465. https://doi.org/10.1111/j.1540-6261.1992.tb04398.x

Hammami, A., Ghenimi, & Bouri, A. (2019). *Oil prices, US exchange rates, and stock market: evidence from Jordan as a net oil importer. MPRA Papers*.

Handayani, W., & Oktavia, S. (2018). Effect of Rupiah Exchange Rate, GDP Growth, and Dow Jones Index on Composite Stock Price Index in Indonesia Stock Exchange. *Journal of Accounting and Strategic Finance*, *1*(01), 23–32. https://doi.org/10.33005/jasf.v1i01.24

Hoffman, K., & Kunze, R. (1971). *LINEAR ALGEBR A Second Edition* (second). Prenticd-Hall.

Kahneman, D., & Tverrsky, A. (1979). Prospect Theeory: An Analysis of Decision Under Risk. *Journal of The Econometric Society*, *47*(2), 263–291.

Karim, A., Saifudin Nur, M., & Faturohman, A. (2017). Autocorrelation Spatial Infrastruktur Transportasi di Jawa Tengah. *Prosiding Seminar Nasional Publikasi Hasil-Hasil Penelitian Dan Pengabdian Masyarakat*, 8–11.

Kelikume, I., & Muritala, O. (2019). The impact of changes in oil price on stock market: Evidence from Africa. *International Journal of Management, Economics and Social Sciences (IJMESS)*, *8*(3), 169–194. https://doi.org/10.32327/IJMESS/8.3.2019.11

Kusumawati, D. A., & Asandimitra, N. (2017). Impact of Global Index, Gold Price and Macro Economic Variable for Indonesia Composite Index. *Research Journal of Finance and Accounting*, *8*(2).

Lintner, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *The Review of Economics and Statistics*, *47*(1), 13. https://doi.org/10.2307/1924119

Majid, M. S. A. (2018). *Who Co-moves the Islamic Stock Market of Indonesia - the US , UK or Japan ? 10*(July), 267–284.

Marcus, M., & Minc, H. (1988). *Introduction to Linear Algebra*. Dover Publications.

Mashadi. (2018). *Principal Component Analysis (PCA) Salah Cara Mengatasi Multikolinearitas*.

Narayan, P. K., Phan, D. H. B., Sharma, S. S., & Westerlund, J. (2016). Paci fi c-Basin Finance Journal Are Islamic stock returns predictable ? A global perspective. *Pacific-Basin Finance Journal*, *40*, 210–223. https://doi.org/10.1016/j.pacfin.2016.08.008

Nur Qolbi, & Wahyu T.Rahmawati. (2020). *BEI: Pasar modal syariah berkembang pesat dan semakin menarik*. Https://Investasi.Kontan.Co.Id/.

Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, *13*(3), 341–360. https://doi.org/10.1016/0022-0531(76)90046-6

Sharpe, W. F. (1964). CAPITAL ASSET PRICES: A THEORY OF MARKET EQUILIBRIUM UNDER CONDITIONS OF RISK. *The Journal of Finance*, *19*(3), 425–442. https://doi.org/10.1111/j.1540-6261.1964.tb02865.x

Shiller, R. J. (2003). *From Efficient Markets Theory to Behavioral Finance*. *November*, 42–43.

Widodo, W. (2018). ANALISIS PENGARUH INDEKS HARGA SAHAM GABUNGAN REGIONAL ASIA TERHADAP INDEKS HARGA SAHAM GABUNGAN INDONESIA. *EkBis: Jurnal Ekonomi Dan Bisnis*, *1*(2), 148. https://doi.org/10.14421/ekbis.2017.1.2.1016

Yahya, M., Hussin, M., Muhammad, F., Fauzi, M., Hussin, A., & Razak, A. A. (2012). The Relationship between Oil Price, Exchange Rate and Islamic Stock Market in Malaysia. *Research Journal of Finance and Accounting* , *3*(5), 83–92

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