Economics and Business Quarterly Reviews

The Asian Institute of Research *Economics and Business Quarterly Reviews* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Economics and Business, which include, but are not limited to, Business Economics (Micro and Macro), Finance, Management, Marketing, Business Law, Entrepreneurship, Behavioral and Health Economics, Government Taxation and Regulations, Financial Markets, International Economics, Investment, and Economic Development. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Economics and Business Quarterly Reviews* aims to facilitate scholarly work on recent theoretical and practical aspects of Economics and Business.

The Application of APT in Predicting the Stock Performance through a Macro Variable Model Approach

Suskim Riantani[1], Gusni[2], Siti Komariah[3]

[1,2,3] Faculty of Economy and Business, Widyatama University, Bandung, Indonesia

Abstract

The Arbitrage Pricing Model (APT) is extensively applied by finance scholars, integrating macroeconomic factors to forecast stock price trends and returns. The macroeconomic variables in APT used to predict stock performance in this research are the rate of inflation, the Indonesian exchange level, the monetary supply, and the rate of interest. Stock performance is measured through actual stock returns. The research method employs descriptive verification analysis with a numerical method. The study was undertaken in the Agriculture Industry, specifically the Plantation Subsector of Palm Oil Commodities traded on the Indonesia Stock Exchange (IDX). Observations were made in the timeframe of 2020-2022 on 17 stock issuers. Sampling was conducted utilizing the purposive sampling technique. Data examination utilized multiple linear modeling after first conducting classical assumption tests, which comprise data tests of normality, heteroskedasticity tests, tests for multicollinearity and autocorrelation. The research model was tested employing the F-test and t-test to examine the research hypotheses at a 5% significance level. The findings of the study indicate that inflation significantly impacts actual returns of stock with a negative relationship. Meanwhile, the foreign exchange rate, money supply, and rate of interest do not have a considerable impact on actual stock returns.

Keywords: Arbitrage Pricing Theory, Inflation, Exchange Rate, Money Supply, Interest Level, Actual Return

1. Introduction

The contribution of the agricultural sector to Indonesia's economy has been quite significant in recent years. Even during the pandemic, the performance of stock issuers in agriculture and plantation-based commodities saw a notable increase. Data sourced from the National Statistical Office (or Biro Pusat Statistik/BPS) shows that the agricultural sector's Gross Domestic Product (GDP) in the fourth quarter of 2020 grew by 2.59% year-on-year (yoy). Employment absorption reached 29.5% in early 2021, up by 0.36% from the previous year. The plantation sub-sector also contributed around 3.94% to GDP in 2021, ranking first in the Agriculture, Livestock, Hunting, and Agricultural Services sector. This sector also generated foreign exchange from exports amounting to USD 50 billion in 2022. The agriculture and plantation industry, particularly palm oil commodities, is one of the strategic sectors in national development, with its production showing an increasing trend over the past ten years.
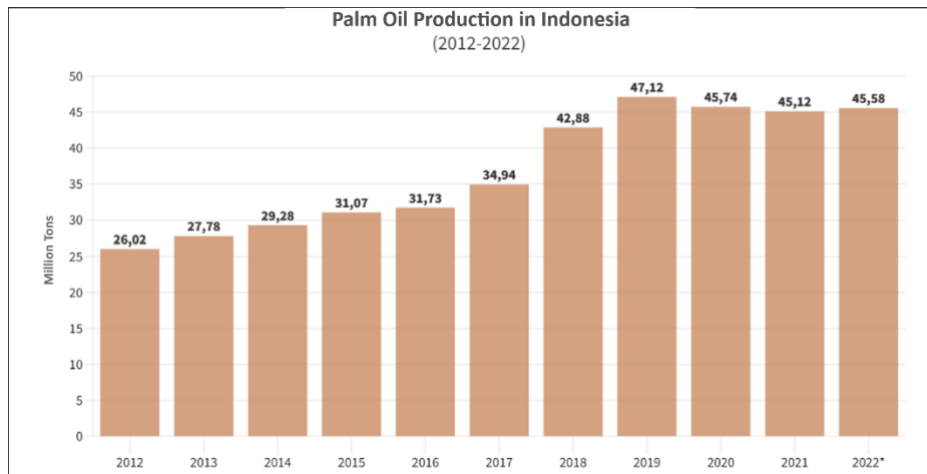
Figure 1: Trends in Indonesia's Palm Oil Production
Source: Central Statistics Agency, BPS 2022

The development of the plantation sub-sector, particularly in palm oil commodities, has made a significant contribution to Indonesia's trade balance surplus, especially over the past three years during and after the pandemic. Increased productivity in the palm oil commodity sector can also boost the performance of this industry in the capital market, further strengthening public interest in its stocks.
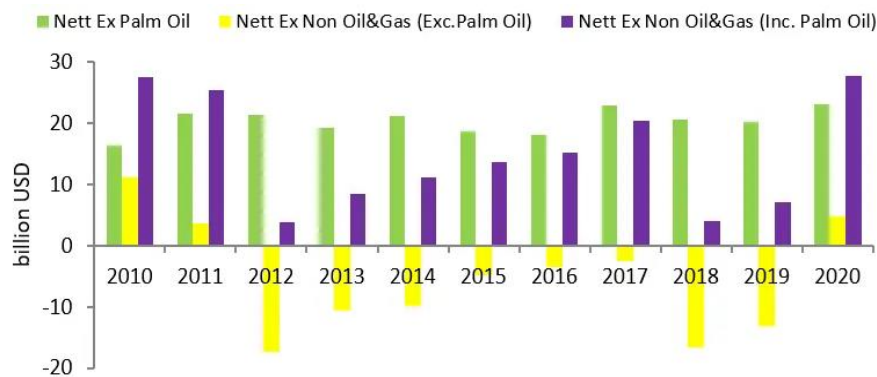

Figure 2: Contribution of Palm Oil Foreign Exchange to The Trade Balance
for the Period 2010-2020
Source: BPS, data processed by PASPI

The growth of palm oil commodities aligns with the improvement in crude palm oil (CPO) prices in the global market. The rise in CPO prices will positively influence the performance of palm oil issuers within the Indonesian capital market. This condition should be of interest to investors and could drive stock price increases. However, the growth in production and the improvement in commodity prices have not aligned with investors' stock returns, which have fluctuated year to year during the observation period. A preliminary assumption suggests that macroeconomic variables may contribute to the fluctuations in stock prices within this sector.
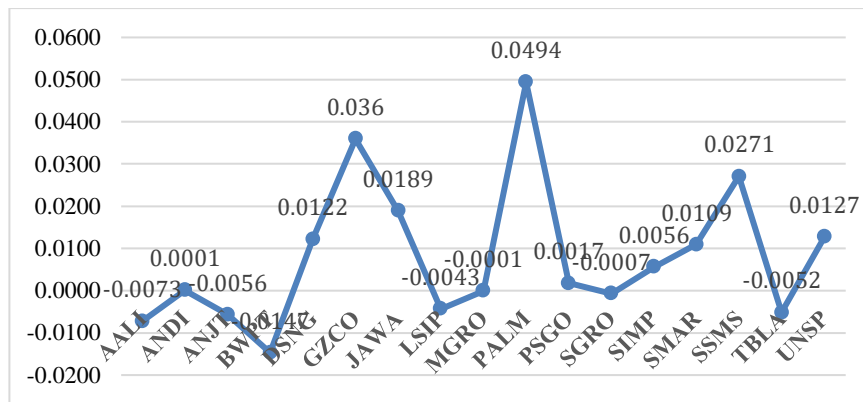
Figure 3: Average Stock Returns of Palm Oil Commodities Traded on the IDX from 2020 to 2022
Source: Processed Statistics, 2023

In fact, there are many alternative stocks that investors can choose from, particularly those that offer the potential for maximum returns at a particular degree of risk that could be tolerated or even minimized. Various approaches can also be used by investors to achieve maximum returns with minimized risk. Commonly used approaches include the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT). The APT method emerged as a refinement of the CAPM method when forecasting the risk-return relationship associated with equities. Therefore, this study will focus on the application of the APT method to predict stock returns through several macroeconomic variables. Many studies have been conducted on how APT can influence stock returns, but the findings of these studies show varying results.

APT incorporates the contribution of several macroeconomic variables to predict stock performance through stock returns. Macroeconomic variables commonly used by researchers in APT to predict stock performance include inflation rate, exchange rate, money supply, and interest rate (BI rate). Stock performance will be measured through actual returns on palm oil commodity sector stocks. Predicting stock prices from a macroeconomic perspective is believed to provide more accurate information on how an investor can achieve stock returns at a certain level of risk and design an optimal portfolio. However, previous studies have shown differing results. Based on this, the current research is conducted to re-examine APT using the contribution of several macroeconomic variables in predicting stock returns.

Based on the above description, this study aims to re-analyze how the application of APT through identified macroeconomic variables can influence stock returns. The macroeconomic variables in question include inflation, exchange rate, money supply, and interest rate. Stock returns are measured using actual returns applied to palm oil commodity plantation sub-sector stocks.

2. Literature Review

The responsibility of a company in terms of financial management is to maximize its value. Company worth may be defined viewed as the cost of a potential a buyer is prepared to pay if the company were to be sold. For publicly listed companies, company value can be measured by the stock price within the financial market. The stock value reflects investors' opinions regarding the performance of the business. As the stock value increases, so does the worth of the company. An evelated and continuously rising stock price will provide benefits for shareholders. This condition indicates that the company's stock is performing well, as it can generate returns for its shareholders.

2.1. Stock Performance (Actual Return)

Stock performance is a measure of the achievement attained through the management of the company's shares and reflects the company's financial health. Stock performance can be observed through stock returns and abnormal returns. In this research, stock performance will be measured using stock returns. Stock return represents the rate of return or the profit obtained by investors from their investment activities. Stock return determines the investment patterns undertaken by investors (Yap & Firnanti, 2019). Stock returns consist of capital gains (losses) and yield,

which is in the form of dividends, a portion of the company's profit (Maisyuri, et al., 2022). Many companies do not distribute dividends, so in this study, stock return will be measured solely by actual return, which refers to the capital gain (loss) obtained from the change in stock price.

Apart from investor perception, stock returns are influenced by various factors. This study will examine how the application of Arbitrage Pricing Theory (APT) through macroeconomic variables can affect actual stock returns. The macroeconomic variables that will be examined for their impact on stock returns are inflation, exchange rate, money supply, and interest rate. Actual return refers to the realized return, calculated by the difference between the current period's individual stock price and the previous period's, excluding dividends (Fahmi, 2018; Nuzula & Nurlaily, 2020).

2.2. Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory (APT) is an alternative equilibrium model to the Capital Asset Pricing Model (CAPM). Developed by Ross in 1976, APT is used to analyze the relationship between the risk and return associated with an asset. The model posits that, in a competitive financial market, arbitrage activities will cause two assets with similar characteristics (such as the same level of risk) to yield the same expected return (Arifin, 2005).

Arbitrage Pricing Theory (APT) is an alternative model for determining stock prices, entirely based on the concept of arbitrage, hence the name Arbitrage Pricing Theory. The arbitrage pricing theory suggests that the price of an asset in the market does not reflect the appropriate risk, creating an opportunity to gain profit by buying or selling assets without risk (Kurniawati & Kamil, 2023). In this context, APT emphasizes the concept of arbitrage, referring to efforts to exploit differences in asset prices or returns to gain risk-free profit (Kurniawati & Kamil, 2023). APT assumes that the return of an asset can be predicted by using the relationship between the asset and certain risk factors. APT asserts that a stock's anticipated return is affected by multiple risk factors that represent the overall economic environment (Zunara & Hartoyo, 2016).

APT was developed to overcome the shortcomings of the CAPM framework, enabling the consideration of multiple factors, especially macroeconomic influences, in assessing asset returns alongside systematic risk. One major limitation of CAPM is that it considers only one factor, systematic risk (market risk), as the determinant of asset returns. According to the Arbitrage Pricing Theory, the return on a security is a linear function influenced by several macroeconomic variables, and sensitivity to changes in each factor is represented by the beta coefficient for each factor. Therefore, APT was designed to overcome this limitation by allowing the inclusion of multiple factors to determine asset returns (Safitri, et al., 2018).

APT suggests that stock prices are influenced by various factors. Over time, much literature has discussed APT using macroeconomic variables. Since macroeconomic variables affect stock prices, these variables can be used as factors in APT. Macroeconomic variables commonly used by researchers include inflation, exchange rates, money supply, and interest rates, which are variables that influence stock prices and the likelihood of investors obtaining stock returns. Therefore, this study uses these four macroeconomic variables to predict stock returns.

2.3. Inflation

Inflation is defined as the general rate of price increase that occurs continuously. The inflation rate is measured by the changes within the prices of commodities in most cases, typically using the consumer price index. From the company's perspective, inflation can increase revenues while also increasing costs. If the rise in production costs exceeds the increase in prices enjoyed by the company, then profits will decline. This decrease in profit will reduce the company's ability to pay dividends to shareholders, thereby negatively affecting investors' perceptions of the company's performance. Consequently, the firm's stock is likely to become less appealing to investors, impacting the stock price and leading to a decrease in stock returns (Gusni & Riantani, 2017). Based on this, the initial hypothesis of this research is as follows:
  H1: There is a notable impact of the inflation rate on stock returns.

2.4. Exchange Rate

The exchange rate is the price of the domestic currency against foreign currencies. The exchange rate represents the value of one rupiah converted to another country's currency, in this case, the US dollar. Exchange rates are among the indicators that can influence stock market performance. Unstable exchange rate fluctuations can reduce foreign investors' confidence in Indonesia's economy. Furthermore, unstable exchange rate fluctuations can have negative impacts regarding stock trading in the capital market (Lestari & Suaryana, 2020). A declining rupiah exchange rate against foreign currencies, particularly the US dollar, has a negative effect on the economy and the market. A weakening rupiah can impact the rate of investment returns, especially for firms with substantial imports and significant foreign debt. The depreciation of the rupiah also increases the expenses incurred by the company, which can compress profit levels, ultimately leading to a decrease in stock prices. Based on this, the following presents the second hypothesis of this study:
H2: There exists a substantial impact of the exchange rate on stock returns.

2.5. Money Supply

The money supply denotes the overall quantity of money available within the economy. The monetary supply is used by the government as a monetary system to control the quantity of money circulating in society. The money supply can be measured using M1, which includes cash and demand deposits held by the public, and M2, which is M1 plus quasi-money such as deposits in commercial banks (Kainde & Karnoto, 2021). The money supply affects stock prices (Heriyanto & Ming, 2014). Any increase in the money supply can influence stock prices. When the money supply increases, interest rates tend to decrease, leading to higher stock prices and a bullish market. A reasonably growing money supply positively influences economic activity and short-term equity markets. However, if the money supply grows drastically, it can trigger inflation, ultimately having a negative impact on the equity market. Based on this, the following presents the third hypothesis of this study:
H3: There exists a substantial impact of the money supply on stock returns.

2.6. Interest Rate

The rate of interest mentioned here refers to the Bank Indonesia Certificate (SBI), which is a short-term debt security traded at a discount. The SBI interest rate is often used as a benchmark and comparison for the stock returns that investors can expect. For issuers, an increase in this interest rate will raise their financial burden and compress profit earnings. When interest rates are high, production costs increase, making products more expensive. For certain products, this condition leads consumers to delay purchases, ultimately resulting in decreased sales for the company. This decline in sales can lead to reduced profits, putting downward pressure on stock prices (Wulandari, 2021). Based on this, the following presents the fourth hypothesis of this study:
  H4: There exists a substantial impact of the interest rate on stock returns.

3. Method

This analysis utilizes both explanatory and verifiable methods. The unit of analysis focuses on the agricultural industry, specifically the palm oil sub-sector, which is listed on the Indonesia Stock Exchange (IDX) during the period of 2020-2022. The sample is taken using purposive sampling, with the criteria of active palm oil sub-sector companies that have been trading their shares on the exchange throughout the research period. Based on these criteria, stock return data will be collected from a sample of 17 listed companies. The data sources include information released by Bank Central and the Indonesia Stock Exchange (IDX). All data for each research variable will be collected on a monthly basis.

The variables used in this study consist of actual return as the dependent variable, and macroeconomic variables, which include inflation, exchange rates, interest rates, and money supply as independent factors.

Table 1: Operationalization of Variables

Variable	Definition	Measurement
Dependent Variable		
Actual Return (AR)	The difference between the current stock price of an individual stock and its price in the previous period.	$Ri = \dfrac{P(t) - P(t-1)}{P(t-1)}$
Independent Variables		
Inflation (INF)	An increase in the prices of goods that are generally classified and occur continuously.	Actual inflation – Expected inflation
Exchange Rate (ER)	A comparison between the currency value of one country and that of another country.	Actual exchange rate – Expected exchange rate
Money Supply (MS)	The total amount of money in circulation within the community, consisting of M1 and M2.	Actual money supply – Expected money supply
Interest Rate (IR)	The return on a certain investment as a form of compensation provided to investors.	Actual interest rate – Expected interest rate

The method of data analysis employed in this research employs multiple linear analysis, following a series of classical assumption tests. The classical assumption tests utilized include the normality test, autocorrelation test, heteroscedasticity test, and multicollinearity test.

The regression model in this study can be expressed with the following equation:

$$AR = a + b_1\,INF + b_2\,ER + b_3\,MS + b_4\,IR + e$$

In order to assess the adequacy of the constructed regression model, an F-statistic test is carried out. Additionally, the hypothesis is examined using the t-statistic

The coefficient of determination (R^2) is used to measure how well the model explains the fluctuations in the independent variables. A small R^2 value signifies that the independent variables, specifically inflation and exchange rates, money supply, along with interest rates that have limited capacity to account for the dependent variable (actual return). Conversely, an R^2 value close to one suggests that the model effectively explains the variation in the dependent variables. An R^2 worth approaching zero indicates the framework's limited capacity to describe changes within the independent variables. The R^2 statistic used in this study is Adjusted R^2, which may increase or decrease when the independent variable is included in the regression framework.

4. Research Results and Discussion

The following presents the results of the multiple linear regression model estimation, which has undergone a series of classical assumption tests. These classical assumption tests include the normality test, heteroscedasticity test, multicollinearity test, and autocorrelation test. All the requirements for the classical assumption tests have been met, indicating that the data follows a normal distribution, there exists lack of heteroscedasticity, lack of multicollinearity, and lack of autocorrelation.

The subsequent results of the data processing include the model evaluation results (F-statistic test), hypothesis evaluation results (t-statistic test), and the determination coefficient, represented by the R-Squared value. The results of this data processing can be seen in the following table.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.048	4	.012	3.333	.022[b]
	Residual	.111	31	.004		
	Total	.159	35			

a. Dependent Variable: actual return

b. Predictors: (Constant), inflation, exchange rate, money supply, and interest rate

The regression model validation was executed using the F-test, as shown in the ANOVA table above, indicating that the model used is appropriate with a F sig value of 0.022 (2.2%) at a significance level of 5%. This value demonstrates that the macroeconomic variables employed as independent variables have a linear relationship with the actual return on stocks as the dependent variable. This aligns alongside the Arbitrage Pricing Theory (APT), whichever suggests that stock returns can be forecasted by analyzing macroeconomic variables, specifically inflation, exchange rates, money supply, and interest rates. The established model is fit and can proceed to t-test for hypothesis testing because it displays a significance worth less than the predetermined alpha level of 5%.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.548[a]	.301	.211	.059968	2.070

a. Predictors: (Constant), inflation, exchange rate, money supply, and interest rate

b. Dependent Variable: actual return

The findings regarding the coefficient of determination (R^2) test, as observed in the Model Summary chart above, indicate which the ability of the constructed model intended to address the fluctuations in the actual outcomes of palm oil commodity stocks is still limited. The R-squared value is only 0.301, meaning that the macroeconomic variables used as independent variables can only explain 30.10% of the variation in stock returns as the dependent variable; the remaining 69.90% is explained by other variables not included in this regression model.

The Modified R-Squared worth reflects the precision of the APT equation model used to predict the impact of macroeconomic variables on actual returns. An Adj. R-Squared value of 0.211 indicates that the variation in actual returns can be explained by the variation in inflation, exchange rates, money supply, and interest rates at a rate of 21.1%. This calculation of adjusted R-square shows that 21.1% of the variation in actual returns can be predicted by inflation, exchange rates, money supply, and interest rates, albeit at a low level. Nevertheless, the results of the APT model testing demonstrate that the predictors of inflation, exchange rates, money supply, and interest rates are significant for stock performance (actual return), with a p-value of 0.022, which is less than the predetermined alpha level.

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
(Constant)	-9.055	4.284		-2.114	.043		
INF	-3.170	1.322	-.682	-2.397	.023	.279	3.590
ER	.441	.393	.221	1.122	.270	.579	1.726
MS	.314	.182	.428	1.729	.094	.368	2.720
IR	-.012	.028	-.103	-.433	.668	.398	2.513

a. Dependent Variable: actual return (AR)

Based on the coefficients table above, the research model can be formulated as follows:

$$AR = -9.055 - 3.170 \ INF + 0.441 \ ER + 0.314 \ MS - 0.012 \ IR + e$$

The multiple linear regression equation model indicates an APT model where the value of the constant coefficient is negative. This implies that if inflation, exchange rates, money supply, and interest rates are all equal to zero, the actual return on stocks will decrease by the value of the coefficient. The coefficients for the exchange rate and money supply show positive values, indicating that if the exchange rate or money supply increases by one unit, the actual return on stocks will rise by the same value as the regression coefficient. Meanwhile, the coefficients for inflation and interest rates are negative, meaning that if inflation or interest rates increase by one unit, the actual return on stocks will decrease by the value of the regression coefficient.

The results of the first hypothesis test indicate that the inflation predictor has a significant negative impact on actual return (p-value 0.023). Thus, the first hypothesis in this study can be accepted. This suggests that movements in the inflation rate can be used to predict changes in actual stock returns. A decrease in inflation can lead to an increase in actual stock returns, while an increase in inflation can result in a decrease in actual stock returns. High inflation rates reflect unfavorable economic and political conditions, which can influence investor decisions regarding stock investments. The government's efforts to control inflation significantly impact the returns for stock investors. When inflation is controlled, especially within a threshold of no more than 10%, the stock market can become a promising investment alternative for investors. Maintaining low inflation levels will likely enhance investment interest in the stock market. Processed data shows that during the research period, the average inflation rate was below 10%. This condition signals a favorable opportunity for investors to invest in the stock market, as such investments are likely to yield beneficial actual returns.

The results of this study are consistent with the work of Ramadhani et al. (2023), Sukmayana et al. (2022), Suharyanto and Zaki (2021), and Rahayu (2021), which found that inflation significantly negatively affects the returns of stock. The findings of this research contradict the findings of Gusni and Riantani (2017), Maharani and Haq (2022), Maharditya et al. (2018), Febriyanto et al. (2024), Suriyani and Sudiartha (2018), and Khaeltisya (2022), who stated that inflation does not significantly affect returns of stock.

The second hypothesis of this study posits that the exchange rate is predicted to influence actual stock returns. The hypothesis test results show that the exchange rate does not impact actual stock returns, resulting in the dismissal of the theory. This condition indicates that fluctuations in the exchange rate have no impact on changes in the actual income from palm oil commodity stocks. The lack of influence from the exchange rate may stem from the instability of the global economic condition, as well as domestic economic and political conditions, which further depress the actual return on palm oil commodity stocks due to low demand from investors. Based on this research, investors do not need to focus on the prevailing exchange rate when deciding to allocate funds to the stock market, particularly in palm oil commodity stocks.

The results of this study are consistent with research conducted by Gusni and Riantani (2017), Kainde and Karnoto (2021), Maharani and Haq (2022), Zunara and Hartoyo (2016), and Wardani et al. (2023), which found that the exchange rate does not affect stock returns. Additionally, research by Gabriel et al. (2016) indicated that the exchange rate has no effect on stock returns in the Nigerian Capital Market. These findings contradict those of Lestari and Suaryana (2020), Maharditya et al. (2018), Suharyanto and Zaki (2021), Sukmayana et al. (2022), Suriyani and Sudiartha (2018), and Khaeltisya (2022), whose studies found that the exchange rate has a significant impact on stock returns.

The third hypothesis of this study posits that the money supply is predicted to affect actual stock returns. The hypothesis test results indicate that the money supply does not impact actual stock returns, leading to the rejection of the hypothesis. This condition suggests that increases or decreases in the money supply in the community, as well as government efforts through monetary policy to control the money supply, do not affect the actual returns on stocks for investors. When the money supply increases, individuals tend to focus on fulfilling their obligations to pay bank deposit interest or the coupons of bonds they hold. Therefore, the increase in the money supply does not lead to an increase in stock prices and stock returns, as there are no additional funds available for investment

in the capital market. Market participants are still limited to investors who have access and information to enter the capital market, so the increase in the money supply does not penetrate the capital market.

The findings of this study align with research by Kainde and Karnoto (2021), Samiudin (2023), and Khaeltisya (2022), which found that the money supply does not affect stock returns. These findings contradict research by Wardani et al. (2023), whose study concluded that the money supply significantly affects the returns of stock.

The fourth hypothesis of this research asserts that engagement rates, as measured by interest rate levels, influence actual stock returns. The hypothesis test results suggest that interest rates have no effect on the actual returns of stock, resulting in the rejection of the hypothesis. This condition suggests that fluctuations in interest rates have no impact on changes in the actual returns of palm oil commodity stocks. This research rejects the theory that high interest rates serve as a negative signal for investors, leading them to withdraw their investments from stocks and shift them to savings or deposits. The implications of this study for investors indicate that when deciding to invest in the capital market, they do not need to consider fluctuations in prevailing interest rates, as interest rates do not serve as a benchmark for actual returns, especially for palm oil commodity stocks.

The findings of this research are consistent based on research carried out by Febriyanto and others. (2024), Maharani and Haq (2022), Maharditya and others. (2018), Suharyanto and Zaki (2021), Suriyani and Sudiartha (2018), Khaeltisya (2022), Samiudin (2023), Wardani and others. (2023), which revealed that interest rates do not affect the returns of stock. Conversely, these findings contradict based on research carried out by Gusni and Riantani (2017), Ramadhani and others. (2023), Sukmayana and others. (2022), and Wulandari (2021), which suggested that interest rates significantly affect the returns of stock.

5. Conclusions and Recommendations

5.1. Conclusions

The results of the findings of the research can be summarized as follows:
1. There exists a substantial negative relationship between the inflation rate and stock performance, as measured by actual stock returns.
2. There is no substantial impact of the exchange rate on equity performance, as measured by actual stock returns.
3. There is no substantial impact of the money supply on equity performance, as measured by actual stock returns.
4. There is no substantial impact of the interest rate on equity performance, as measured by actual stock returns.

5.2. Recommendations

According to the research results, the following suggestions can be provided for stakeholders interested in the findings of this study:

a. For Issuers
The results are expected to provide issuers with insights into the effects of inflation movements on shareholders' potential for profit (returns) from their stock investments and to anticipate possible investor losses during periods of rising inflation.
b. For Investors
The findings of this study are expected to serve as a basis for making investment decisions.
c. For Prospective Researchers
The results may serve as a foundation for further research by expanding the variables, research periods, or units of analysis, as well as comparing with the application of other models, such as the CAPM model, in predicting stock returns.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Arifin, Z. (2005). Financial Theory and Capital Market. Second Edition. Yogyakarta: Ekonisia

Fahmi, I. (2018). Financial Performance Analysis: A Guide for Academics, Managers, and Investors, and Analyzing Business from a Financial Perspective. Bandung: Alfabeta.

Febriyanto, Ali, K., and Azyasa, M.W. (2024). The Influence of Inflation and Interest Rates on Stock Returns with Profitability as a Moderating Variable in Consumer Goods Industry Companies. *Deviratif: Jurnal Manajemen, Vol. 18, No.1*, 131-137. https://fe.ummetro.ac.id/ejournal/index.php/JM/article/view/2221.

Gusni. & Riantani, S. (2017). The Use of Arbitrage Pricing Theory to Analyze Sharia Stock Returns. *Ultima Management, Vol.9, No.1*, 69-84. DOI: https://doi.org/10.31937/manajemen.v9i1.598.

Heriyanto. & Chen, M. (2014). Analysis of the Influence of the Consumer Price Index, Money Supply (M1), Rupiah Exchange Rate, and S&P 500 Index on the Composite Stock Price Index: An Empirical Study on the Indonesia Stock Exchange. *Jurnal Nominal, Vol.III, No. 2*, 25-54. https://journal.uny.ac.id/index.php/nominal/article/view/2694/0.

Kainde, L. & Karnoto, G.S. (2021). The Effect of Money Supply, Inflation, and Exchange Rate on Return of Commercial Banks. *Klabat Journal of Management, Vol.2, No.1*, 33-47.

Khaeltisya, K. Danisworo, D.S. Putri, A.G. Eviyanti, N. (2022). The Influence of Macroeconomic Factors on Stock Returns of Infrastructure Companies Listed in the Indonesia Sharia Stock Index. *Journal of Applied Islamic Economics and Finance, Vol.3, No.1*. 64-73. DOI: https://doi.org/10.35313/jaief.v3i1.3800.

Kurniawati, B. & Kamil, A. (2023). Determinants of Stock Price Volatility of Indonesian Manufacturing Companies. *Buletin Ekonomika Pembangunan, Vol.4, No.1*, 173-184. DOI: https://doi.org/10.21107/bep.v4i1.20546.

Lestari, M.D.G.P. & Suaryana, I.G.N.A. (2020). The Influence of Exchange Rates on Stock Returns with Profitability as an Intervening Variable. *E-Jurnal Akuntanis (E-JA). Vol.30, No.5*, 1283-1296.

Maharditya, M. A. Layyinaturrobaniyah. Anwar, M. (2018). Implication of Macroeconomic Factors to Stock Returns of Indonesian Property and Real Estate Companies. *Jurnal Dinamika Manajemen (JDM), Vol.9, No.1*, 100-113. https://journal.unnes.ac.id/nju/index.php/jdm/article/view/14656.

Maharani, A. & Haq, A. (2022). The effects of inflation, interest rates, and exchange rates on stock returns. *Jurnal Ekonomi Trisakti, Vol.2, No.2*, 941-950. https://e-journal.trisakti.ac.id/index.php/jet/article/view/14546/8569

Maisyuri, N.I. Widiyanti, M. & Thamrin, K.M.H. (2022). Comparative Analysis of the Accuracy of Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) in Predicting Stock Returns in Consumer Goods Companies Listed on the Indonesia Stock Exchange. *Al-Kharaj: Jurnal Ekonomi, Keuangan & Bisnis Syariah, Vol.5, No.1*, 53-67. https://journal.laaroiba.ac.id/index.php/alkharaj/article/view/1121

Nuzula, N. F. & Nurlaily, F. (2020). Fundamentals of Investment Management. Malang: UB Press.

Rahayu, A. (2021). The Effect of Inflation, Liquidity and Profitability on Share Returns (Case Study in Banking Sector Companies Foreign Exchange 2016-2018). *Jurnal Ekonomi Mahasiswa (JEKMa), Vol.2, No.1*. 1-7.

Ramadhani, G.F. Hendra. J, & Amani, T. (2023). The Effect of Inflation and Interest Rates on the Stock Returns of Food and Beverage Companies Listed on the Indonesia Stock Exchange for the Period 2016-2019. *Jurnal Management, Accounting, and Digitas Business (JUMAD), Vol.1, No.1*, 141-150.

Safitri, E. Utami, D. & Sari, P.I. (2018). Comparison of the Accuracy of the Capital Assets Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) in Determining Investment Choices in Jakarta Islamic Index (JII) Stocks. *Jurnal Ilmu Manajemen, Vol.8, No.1*, 57-72. https://jurnal.um-palembang.ac.id/ilmu_manajemen/article/view/1557/0

Samiudin, A. (2023). The Effect of Money Supply, BI Rate, and COVID-19 Cases on Sharia Stock Returns. *Jurnal Akuntansi dan Ekonomi, Vol.8, No.2*. 121-126. https://doi.org/10.29407/jae.v8i2.19819

Sukmayana, D. Dewi, L.S. & Ikhsan, S. (2022). Impact of Macroeconomic Movements on Changes in Stock Returns. *International Journal of Social Science and Business, Vol.6, No.4*. 462-468.

Suriyani, N.K. & Sudiartha, G.M. (2018). The Effect of Interest Rates, Inflation, and Exchange Rates on Stock Returns in the Indonesia Stock Exchange. *E Jurnal Manajemen Unud, Vol.7, No.6*. 3172-3200.

Wardani, D.P.K. Azzahra, L.M. & Amaroh, S. (2023). The Effect of BI Rate, Money Supply, and Exchange Rates on Stock Returns of Property and Real Estate Companies in 2020-2022. *Jurnal Pundi, Vol.07, No.02*. 173-184. DOI: https://doi.org/10.31575/jp.v7i2.474

Wulandari, T. (2021). Analysis of the Effect of Variance and Interest Rates on Stock Returns: A Study of IDX30 Companies Listed on the Indonesia Stock Exchange. *Journal Management, Business, and Accounting, Vol.20, No.3.* 235-247. DOI: https://doi.org/10.33557/mbia.v20i3.1512

Yap, H.C. & Firnanti, F. (2019). Factors Affecting Stock Returns. *Jurnal Bisnis dan Akuntansi, Vol.21, No.1a-1,* 27-38.

Zunara, E., & Hartoyo, S. (2016). Analysis of the Impact of Macroeconomic Factors on Stock Returns and Risk Premium Using the Arbitrage Pricing Theory Model. *Jurnal Aplikasi Manajemen (JAM), Vol.14, No.3,* 546-556. DOI: http://dx.doi.org/10.18202/jam23026332.14.3.15