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Health Sector Stock Performance Model On The Indonesian Stock Exchange

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Abstract

This study examines the performance of the health sector index listed on the Indonesia Stock Exchange (IDX) during the leadership of Susilo Bambang Yudhoyono (SBY, 2004–2014) and Joko Widodo (JKW, 2014–2024), analyzing monthly data comprising eight stock observations. This research is novel for three reasons: First, it uses an Arbitrage Pricing Theory (APT) model with a separate analysis for high- and low-return categories. Second, it systematically compares the influence of seven macroeconomic factors (global indices, macroeconomic indicators, world oil prices, China indices, Arab indices, competitive resources, and inflation) across two distinct government periods. Third, it validates the accuracy of the model using Mean Absolute Deviation (MAD), offering a methodological advancement in stock performance analysis. The results show that, during the SBY administration, all macroeconomic factors significantly influenced stock returns in both the high- and low-return categories. Conversely, during the JKW administration, macroeconomic factors did not simultaneously significantly influence either high or low returns. These findings provide new empirical evidence regarding the sectoral responsiveness of healthcare stocks to macroeconomic factors under different Indonesian governments, and policymakers should recognize that the healthcare sector's responsiveness to macroeconomic factors varies significantly across political leadership.

Keywords: *Arbitrage Pricing Theory, Government, Health Sector, Indonesia Stock Exchange, Macroeconomic Factors.*

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1. INTRODUCTION

The capital market is a crucial instrument in the modern economy, providing avenues for capital formation and investment activities. The Indonesia Stock Exchange (IDX) provides a platform through which various industrial sectors, including the healthcare sector, can obtain funding. The healthcare sector plays a significant role in supporting national growth and development. The development of Indonesia's healthcare sector is influenced by internal company dynamics and changes in global and domestic macroeconomic conditions.

Stock returns in the healthcare sector fluctuated during the Susilo Bambang Yudhoyono (SBY) administration from 2004 to 2021, influenced by both the global economic crisis and domestic political crises. Meanwhile, the Joko Widodo (JKW) administration has faced challenges, particularly in the healthcare sector. The sector is expected to experience price fluctuations and stock declines due to the pandemic, leading to numerous considerations for investors. This research builds on the Principal Component Analysis (PCA) conducted by Garnia et al. in 2023 and 2024. Previous research (Garnia et al., 2023) reduced 40 macroeconomic factors to six based on data analysis. In this study, however, one factor was added, resulting in seven macroeconomic factors suspected of influencing returns. These factors include the Global Index, macroeconomic indicators, world oil prices, the China Index, the Arabian Index, competitive resources, and inflation.

Previous studies have shown that stock price movements and the rate of return in certain sectors may be affected by macroeconomic factors such as global market indices, inflation, world oil prices, exchange rates, and other economic indicators (Chen et al., 1986; Humpe & Macmillan, 2007). One widely used approach to measuring the influence of these factors is Arbitrage Pricing Theory (APT), developed by Ross (1976), which allows for the use of multiple risk factors to explain variations in stock returns. This study uses the APT model as a theoretical approach and compares its accuracy using the mean absolute deviation (MAD) method. APT is a more complex alternative equilibrium model because it uses multiple risk measurement variables to explore the link between risk and return (Bonga-Bonga & Mpoha, 2025; Tinggi et al., 2022). MAD is a method used to assess the accuracy of a forecast by calculating the average absolute value of prediction errors. MAD measures the average absolute deviation between actual data and predicted results (Yuwono & Yulianto, 2022). Stock returns are an important factor motivating investors and reflecting appreciation for their courage in accepting investment risks (Alimusa & Murini, 2018).

The Principal Component Analysis (PCA) in this study reduced 40 factors to seven main factors, one of which is the Global Index variable. This variable represents a set of stock indices from various international stock exchanges that are periodically evaluated, including the American Stock Exchange, the Singapore Stock Exchange, the South Korean Stock Exchange, and the United Kingdom Stock Exchange, among others. The Global Index is formed from 17 correlated indices based on the PCA residual results. These indices include the DJW, S&P 500, Nasdaq, Nasdaq 100, and NYSE (American Index); Hang Seng (Hong Kong Index); Kospi 50 and Kospi (Korea Index); FTSE Malaysia KLCI (Malaysia Index); FTSE Singapore and MSCI Singapore (Singapore Index); SET (Thailand Index); Nikkei 225 (Japan Index); DAX and Euro Stoxx 50 (German Index); CAC 50 (French Index); and FTSE England 100 (UK Index).

Other factors formed from the PCA results include macroeconomic variables that study overall economic conditions, such as unemployment rates, employment opportunities, public spending, national income, and interest rates (Astuti et al., 2016a). World oil prices, as a macroeconomic indicator, play a vital role in global economic activity. Fluctuations can impact a country's capital market, particularly the mining sector on the Indonesia Stock Exchange (IDX). Rising world oil prices have the potential to increase mining companies' net profits, thereby boosting investor interest and positively impacting the Jakarta Composite Index (JCI) (Darmawan & Saiful Haq, 2022).

Another factor is the China Index, a benchmark for stock market development in China formed from three main components: the SZSE, Shanghai, and FTSE Hong Kong indices. The Arabian Index includes the largest stocks in the Middle

East and is a composite of the ADX, DFM (United Arab Emirates Index), and TASI (Saudi Arabia Index). Furthermore, competitive resources are relevant to international trade and investment. In this study, they are represented by the nickel price (Garnia et al., 2023). The final factor is inflation, which represents a broad and continuous escalation of prices within an economy over a defined period (Suriyani & Sudiarta, 2018).

In the Indonesian context, political dynamics significantly influence capital market performance. Changes in government administration can have different economic policy implications that influence investor perceptions and market responses. The leadership of Susilo Bambang Yudhoyono (2004–2014) and Joko Widodo (2014–present) reflects two distinct phases of economic policy in terms of development strategy, fiscal management, and market orientation. However, studies specifically comparing the health sector's response to macroeconomic factors under these two leaders are limited. This is due to the health sector's unique characteristics, such as its resilience to economic crises and its close links to public policy. These characteristics can result in different responses to changes in macroeconomic variables.

Previous research has highlighted the significant relationship between macroeconomic variables and economic growth (Saputro & Meirinaldi, 2021). World oil prices affect the IHSG (Nurhasanah et al., 2021). Inflation has a negative, though statistically insignificant, impact on stock returns in property and real estate firms (Suriyani & Sudiarta, 2018). The Chinese index influences the IHSG (Anggraini & Nurhadi, 2019). Competitive resources influence PT. Antam's stock returns (Ayu Charissa & Eduardus, 2021).

Despite extensive research on macroeconomic factors and stock market performance, several critical gaps persist. First, although studies have examined general market indices, analysis of the healthcare sector remains scarce despite its unique characteristics, such as defensive properties and countercyclical behavior. Second, existing APT applications rarely differentiate between high- and low-return stocks, potentially obscuring important response variations. Third, comparative studies across different political leaderships are virtually absent from Indonesian capital market research despite the distinct policy regimes of the SBY (2004–2014) and JKW (2014–2024) administrations. Fourth, methodological validation beyond R-squared is limited, with few studies employing mean absolute deviation (MAD) to assess forecast accuracy. Finally, no study has comprehensively integrated the seven-factor principal component analysis (PCA) model with return stratification, inter-administration comparison, and mean absolute deviation (MAD) validation for Indonesia's healthcare sector. This study addresses these gaps by providing a robust, sector-specific analysis that bridges the gap between theoretical APT applications and practical investment implications across political and economic contexts.

This study has three main objectives: analyzing the influence of macroeconomic factors, such as global indices, macroeconomic indicators, world oil prices, the China index, the Arabian index, competitive resources, and inflation, on the high and low returns of health sector stocks during the SBY and JKW administrations; comparing the differences in the influence of these factors during the two administrations; and providing new empirical evidence regarding the sectoral responsiveness of health stocks to macroeconomic factor dynamics in the context of political policy changes in Indonesia (Figure 1).

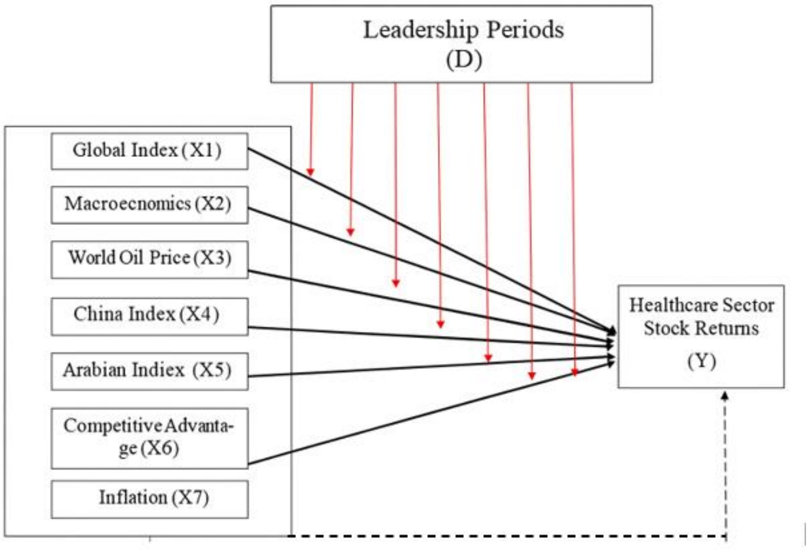

Figure 1. Conceptual Framework

Figure 1 illustrates the study's conceptual framework, which examines the impact of various external factors and macroeconomic conditions on stock returns in the healthcare sector. The independent variables are the Global Index (X1), Macroeconomics (X2), World Oil Prices (X3), China Index (X4), Arabian Index (X5), Competitive Resources (X6), and Inflation (X7). Additionally, the study includes a categorical variable, Government Leadership Period (D), to test for differences in stock returns (Y) in the healthcare sector between two government periods. This allows for an analysis of how the market responds to the independent variables in each period. Arrows depict the direct flow of influence from the independent variables to the dependent variable and compare the effects across the two government periods represented by the dummy variables. This analysis is expected to provide a comprehensive understanding of the dynamics of the healthcare sector stock market under various economic and political conditions..

2. LITERATURE REVIEW

Stock return movements are influenced by various domestic and global factors. The Global Index (X1) is often a leading indicator of international market conditions. Fluctuations in stock prices on global exchanges can have a spillover effect on domestic capital markets (Forbes & Rigobon, 2002). However, the evidence is mixed. Some studies have reported strong positive correlations between global indices and emerging market returns (Gusni & Riantani, 2017), while others have found varying relationships across sectors and periods (Humpe & Macmillan, 2007). This inconsistency suggests that sector-specific characteristics may moderate the impacts of the global market, a topic that has not been extensively explored with regard to defensive healthcare stocks in Indonesia. Furthermore, macroeconomic indicators (X2), including GDP growth, interest rates, and exchange rates, significantly affect company performance and investor sentiment (Mandelker & Tandon, 1985). Meanwhile, this relationship has been confirmed for Indonesia (Saputro & Meirinaldi, 2021); however, contradictory sector-specific evidence has emerged: strong correlations have been found with composite indices (Astuti et al., 2016b), while insignificant inflation impacts have been reported on property stocks (Suriyani & Sudiarta, 2018). These contradictions underscore the need for sector-disaggregated analyses because healthcare may exhibit distinct responsiveness patterns.

World oil prices (X3) are sensitive to geopolitical dynamics and global demand. They directly or indirectly affect certain sectors in the capital market, including the healthcare sector (Hamilton, 2009). They have been shown to have a positive impact on the Jakarta Composite Index (Darmawan & Saiful Haq, 2022). However, the transmission mechanism to healthcare stocks remains unclear. Higher oil prices may increase costs while signaling economic growth and healthcare demand, necessitating empirical investigation across different policy regimes.

Similarly, the China Index (X4) and the Arabian Index (X5) reflect cross-border economic relations, particularly for Indonesia, as it has trade and investment links with both regions (Chen et al., 2002; Bouri et al., 2017). These indices reflect cross-border economic relations and have been found to significantly influence the IHSG (Anggraini & Nurhadi, 2019). However, it is unclear whether this influence extends uniformly across all sectors or if defensive sectors, such as healthcare, exhibit different patterns.

Additionally, competitive resources (X6), including innovation, workforce quality, and market efficiency, can strengthen investment appeal in certain sectors (Porter, 1990). There is documented evidence of the impact of nickel prices on PT. Antam's returns (Ayu Charissa & Eduardus, 2021). However, its applicability to service-based healthcare sectors requires validation. Meanwhile, inflation (X7) is an indicator of price stability that affects people's purchasing power and company operational costs, thereby affecting stock returns (Fama & Schwert, 1977). The literature reveals a paradox: significant negative effects on the IHSG were found (Nurhasanah et al., 2021), yet insignificant sector-specific impacts were reported. This suggests that the ability of healthcare to pass on costs may mediate the effects of inflation (Suriyani & Sudiarta, 2018).

This study uses a dummy variable (D) to differentiate between periods before and after a government's term. Using the dummy variable facilitates analyzing differences in stock returns in the healthcare sector between the two periods. Dummy variables play an important role in economic and capital market research by accommodating categorical data representing certain conditions or periods (Gujarati, 2015). In this study, a dummy variable distinguishes between the terms of Presidents Susilo Bambang Yudhoyono (SBY) and Joko Widodo (JKW). Assigning the codes "0" and "1" to the dummy variable allows for a structured analysis of potential differences in stock return performance in the healthcare sector during each period.

The primary purpose of using dummy variables in this research is not to moderate the link between macroeconomic factors and stock returns but rather to conduct a difference test analysis. This approach allows us to analyze whether there are significant differences in how the healthcare sector's stock returns respond to macroeconomic factors between the two government periods. This approach is similar to those widely used in event study research and interperiod comparative analysis to measure the impact of political policy changes on the capital market (Brooks, 2019; Wooldridge, 2012).

The literature reveals three critical gaps: First, healthcare-specific evidence remains scarce despite the sector's unique characteristics. Second, contradictory findings across sectors suggest that analytical approaches must account for heterogeneity in return categories and policy regimes. Third, no study has integrated the arbitrage pricing theory (APT) with return stratification, inter-administration comparison, and maximum likelihood estimation (MLE) for Indonesia's healthcare sector. Motivated by these gaps, this research aims to analyze the influence of seven macroeconomic factors on high and low healthcare returns during both administrations, compare these influences systematically across political periods, and provide evidence-based insights for investment strategies and policy formulation.

3. RESEARCH METHOD

This study employs a quantitative, causal, comparative approach to assess the impact of macroeconomic factors on stock returns within the healthcare industry, comparing the influence of these factors across two distinct government periods. The study uses monthly secondary data from official institutions, including health sector stock prices from the Indonesia Stock Exchange (IDX) and macroeconomic indicators such as global indices, world oil prices, the China index, the Arabian index, competitive resources, and inflation, which are taken from publications of relevant international and national institutions. The observation period covers the leadership of Susilo Bambang Yudhoyono (SBY) and Joko Widodo (JKW) to allow for an analysis in the context of political policy changes and macroeconomic dynamics. The study utilizes monthly secondary data covering two distinct observation periods: October 2004 to October 2014 (SBY leadership, n = 121 months) and November 2014 to October 2024 (JKW leadership, n = 120 months). This totals 241 monthly observations of eight healthcare stocks. The sample consists of healthcare sector stocks listed on the IDX, categorized into high- and low-return groups based on median return.

The variable of interest is stock return in the healthcare sector, calculated using a logarithmic return formula based on monthly closing prices. The independent variables consist of macroeconomic factors, including global indices, macroeconomic indicators, world oil prices, the China index, the Arabian index, competitive resources, and inflation. The study also employs a dummy variable representing the government period, where 0 indicates the SBY period and 1 indicates the JKW period. This dummy variable is used only for comparative tests to analyze differences in influence between periods and is not used as a moderating variable.

Data were obtained from authoritative sources. (1) healthcare stock prices from the Indonesia Stock Exchange (IDX, www.idx.co.id) and the Bloomberg Terminal, (2) the global index (X1), which comprises seventeen international indices (DJW, S&P 500, NASDAQ, NYSE, Hang Seng, KOSPI, FTSE Malaysia, FTSE Singapore, SET, Nikkei 225, DAX, Euro Stoxx 50, CAC 40, and FTSE 100) from Yahoo Finance and Investing.com, (3) macroeconomic indicators (X2), including GDP growth, interest rates, exchange rates, and employment data from Bank Indonesia (www.bi.go.id), Statistics Indonesia/BPS (www.bps.go.id), and the World Bank (data.worldbank.org), and (4) world oil prices (X3), including Brent crude from the U.S. Energy Information Administration (www.

1. EIA.gov;
2. China Index (X4), a composite of SZSE, Shanghai, and FTSE Hong Kong, from Yahoo Finance;
3. Arabian Index (X5), a composite of ADX, DFM, and TASI, from Gulf exchange websites and Investing.com;
4. Competitive Resources (X6), represented by nickel prices from the London Metal Exchange (www.lme.com);
5. Inflation (X7), CPI data from BPS and Bank Indonesia.

Data analysis was conducted in several stages. First, multiple regression analysis was used to test the influence of macroeconomic factors on overall stock returns in the healthcare sector using equation model (1).

$$Y_{it} = a + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots + \beta_n X_{nit} + e_{it} \quad (1)$$

. The second stage is a difference test using dummy variables to compare the influence of independent variables in two different government periods with the equation model (2).

$$Y = b0 + b1X1 + b2X2 + \cdots + bnXn + b(n+1)D + b(n+2)D.X1 + b(n+3)D.X2 + \cdots + b(2n+1)D.Xn \quad (2)$$

The third stage involves calculating the mean absolute deviation (MAD) to measure the accuracy of the regression model by evaluating the average discrepancy between the observed and forecasted values. A smaller MAD value indicates a more accurate model for predicting stock returns in the healthcare sector using equation (3).

$$MAD = \frac{1}{n}\sum_{t=1}^{n}\left|Y_t - \hat{Y}_t\right| \quad (3)$$

4. RESULTS AND DISCUSSION

4. 1 RESULTS

4.1.1. Classical Assumption Test

Classical assumption testing was performed to confirm that the regression model meets the necessary statistical assumptions, allowing the estimation results to be interpreted validly and reliably. The normality test verified the normality assumption of the regression residuals, and the multicollinearity test verified that the independent variables were not strongly linearly correlated. Next, a test for heteroscedasticity was performed to identify possible inhomogeneity of residual variance. Finally, an autocorrelation test was conducted to detect serial correlation in the residuals. The results of all tests indicate that the model meets these basic assumptions and can be used for further analysis. The results of the normality test are shown in Table 1. Table 2 shows the results of the multicollinearity test for all health stock groups, using a VIF value greater than 10 as the criterion.

Table 1 | Normality Test Results

Information	Jarque-Bera Values	Results
SBY High Return	0.086954 > 0.05	Normally Distributed
SBY Low Return	0.125632 > 0.05	Normally Distributed
JKW High Return	0.144289 > 0.05	Normally Distributed
JKW Low Return	0.428278 > 0.05	Normally Distributed

Source: Processed data, 2024

Table 2 | Multicollinearity Test Results

Macro Factors	SBY		JKW	
	High Return	Low Return	High Return	Low Return
Global Index	1.043514	1.098359	1.066514	1.158035
Macroeconomics	3.378422	4.074382	6.748827	6.794961
World Oil Prices	3.208399	3.808184	1.965380	2.022340
China Index	1.082304	1.094322	1.322704	1.476300
Arabian Index	1.07715	1.114914	1.337235	1.310423
Competitive Resources	1.066817	1.160915	1.723276	1.825829
Inflation	1.396746	1.427514	7.401348	7.378349

Source: Processed data, 2024

Table 3 shows the results of the heteroscedasticity test for all groups of health sector stock returns. With a Chi-Square Prob. value greater than 0.05, it can be concluded that there is no inequality of residual variance among the independent variables in the regression model. Table 4 shows the autocorrelation test results for each group, with the decision-making results dU < dw < (4 - dL).

Table 2 | Heteroscedasticity Test Results for All Groups of Health Stock Returns

Group	Chi-Square Prob. Value	Results
SBY High Return	0.7226 > 0.05	No Hetero Occurs
SBY Low Return	0.954 > 0.05	No Hetero Occurs
JKW High Return	0.3342 > 0.05	No Hetero Occurs
JKW Low Return	0.3439 > 0.05	No Hetero Occurs

Source: Data processed, 2024

Table 3 | Autocorrelation Test Results for All Groups of Health Stock Returns

Group	N	K	DW value (d)	DW Test dU<dw<(4-DL)	Assumptions
SBY High Return	305	7	1.986683	1.8413 < 1.986683 < 2.3034	no autocorrelation
SBY Low Return	303	7	2.113018	1.8413 < 2.113018 < 2.3034	no autocorrelation
JKW High Return	202	7	1.894089	1.8413 < 1.894089 < 2.3034	no autocorrelation
JKW Low Return	236	7	2.458212	1.8413 < 2.458212 < 2.3034	no autocorrelation

Source: Data processed 2024

4.1.2. Multiple Regression Analysis

A multiple regression analysis was conducted to examine the joint and partial influence of the independent variables on the dependent variables. The regression model was used to evaluate the impact of these variables on stock returns in the health sector, with Government Leadership Period as the control variable. The regression equations obtained based on the estimation results are for the high-return group SBY (1), the low-return group SBY (2), the high-return group JKW (3), and the low-return group JKW (4).

$$Y = 0.001586 + 0.020586X1 + 0.001625X2 + 0.000395X3 + 0.001701X4 + 0.008481X5 - 0.00577X6 + 0.020913X7 \quad (1)$$

$$Y = -0.001961 + 0.019186X1 + 0.00723X2 - 0.006542X3 + 0.007471X4 + 0.003197X5 + 0.00553X6 + 0.019219X7 \quad (2)$$

$$Y = -0.822938 + 0.139845X1 + 1.3577317X2 - 0.343721X3 + 0.037815X4 + 0.071912X5 - 0.012786X6 + 0.125576X7 \quad (3)$$

$$Y = -0.140097 + 0.021354X1 + 0.125394X2 + 0.004023X3 + 0.009988X4 - 0.007345X5 + 0.009886X6 - 0.076266X7 \quad (4)$$

After completing the multiple regression procedure to explore how the predictor variables relate to the outcome measure, additional analytical steps are necessary to verify the statistical significance of these relationships. First, t-statistic analysis is used to evaluate the contribution of each predictor, revealing whether each factor independently affects the outcome. Separately, an F-statistic procedure examines whether the predictors, when viewed collectively, demonstrate meaningful joint influence. Finally, the explanatory power of the overall model is quantified using R^2, a metric that indicates the proportion of outcome variability that can be attributed to the included predictor set. Table 5 shows the results of the t-test for the SBY and JKW return groups. Table 6 shows variations in stock returns in the health sector during the SBY and JKW leadership..

Table 4 | Results of the Determination Coefficient

Variables	SBY High Return		SBY Low Return		JKW High Return		JKW Low Return	
	t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.
Global Index (X1)	4,598248	0.0000	4,217628	0.0000	2.357157	0.0428	1.282149	0.2181
Macroeconomics (X2)	0.157554	0.8749	0.691964	0.4895	2.503806	0.0337	1.868735	0.0801
World Oil Prices (X3)	0.058595	0.9533	-0.969446	0.3331	-1.496126	0.1688	0.108030	0.9153
China Index (X4)	0.394681	0.6933	1.735724	0.0836	0.631063	0.5437	0.470699	0.6442

Arabian Index (X5)	1.675317	0.0949	0.675798	0.4997	0.030103	0.3198	-0.469133	0.6453
Competitive Resources (X6)	5.436616	0.0000	4.883022	0.0000	0.198979	0.8467	0.759699	0.4585
Inflation (X7)	-0.695849	0.487	0.76793	0.4431	0.481835	0.6414	-2.004409	0.0623

Source: Data processed 2024

Table 5 | Simultaneous Test Results

Group	Mark F-Stat and F-Table	Results Probability
SBY High Return	7.52636 > 2.140	0.000000 < 0.05
SBY Low Return	5.53495 > 2.140	0.000005 < 0.05
JKW High Return	2.94585 > 2.140	0.067088 > 0.05
JKW Low Return	1.50355 < 2.140	0.235396 > 0.05

Source: Data processed 2024

Table 6 | Results of the Coefficient of Determination

Group	R2 value	Level of Influence
SBY High Return	0.142512 or 14%	Very Low
SBY Low Return	0.110464 or 11%	Very Low
JKW High Return	0.696161 or 60%	Low
JKW Low Return	0.396793 or 30%	Low

Source: Data processed 2024

The coefficient of determination (R^2) reveals substantial differences across government periods and return categories. During the SBY administration, the model exhibited low explanatory power (R^2 = 14.25% for high returns and R^2 = 11.05% for low returns). This indicates that approximately 86%-89% of variations in healthcare stock returns were driven by factors outside the seven examined macroeconomic variables, such as firm-specific factors, changes in healthcare regulations, and crisis-specific shocks during the 2008-2009 global financial crisis. In contrast, the JKW administration demonstrates dramatically higher explanatory power (R^2 = 69.62% for high returns and R^2 = 39.68% for low returns), which is four to six times higher. This increase is attributable to Indonesia's deepening global market integration, improved macroeconomic stability, linkages to the pandemic, and policy initiatives such as the expansion of the National Health Insurance program (JKN). The asymmetry in R^2 during the JKW administration (69.62% vs. 39.68%) suggests that macroeconomic factors exert a stronger influence during positive market conditions because investors systematically incorporate fundamentals during bull markets, whereas behavioral factors dominate during market downturns. From an investment perspective, the high R^2 during the JKW period indicates that macroeconomic factor analysis provides reliable timing signals for investments in the healthcare sector during this administration. In contrast, the SBY period required a greater emphasis on company-specific and sectoral intelligence.

4.1.3. Test of Differences in the Effect of Dummy Variable Regression

The second stage involved conducting a difference-in-effects test with dummy variables to distinguish between the SBY and JKW administrations. The results showed that, during SBY's leadership, there was no significant difference in the effect of high and low returns on any variable.

However, during JKW's leadership, the variables of world oil prices (sig. 0.047 < 0.05) and the China Index (sig. 0.018 < 0.05) exhibited significant differences in influence between high and low returns. Comparing the high returns of the SBY and JKW periods reveals that world oil prices (sig. 0.013 < 0.05) and the China Index (sig. 0.001 < 0.05) exhibit significant differences in influence. Conversely, comparing the low returns of the SBY and JKW periods indicates a significant difference in influence for the Global Index (sig. 0.025 < 0.05) and inflation (sig. 0.007 < 0.05).

4.1.4. Mean Absolute Deviation Test

The mean absolute deviation (MAD) test measures the accuracy with which a model predicts error values. A lower MAD value indicates a lower prediction error rate and, thus, higher accuracy. Based on the calculations in Table 9, JKW's high return period has a MAD value of 0.07594, which indicates the highest level of prediction accuracy among the categories in Table 8.

Table 7 | MAD Test Results

Group	Results MAD
SBY High Return	0.14352
SBY Low Return	0.13964
JKW High Return	0.07594
JKW Low Return	0.08074

Source: Data processed 2024

4.2 DISCUSSION

The results of the differential influence test for the high- and low-return groups during the SBY tenure suggest that the seven macroeconomic factors did not differ significantly in their influence. Partial tests confirmed that the China index, the Arabian index, inflation, and macroeconomic variables did not significantly contribute to changes in returns in either category. This suggests that, during the SBY era, stock return movements were influenced more by factors other than these variables, such as domestic policies or conditions in specific industrial sectors (Bodie et al., 2021).

Conversely, a difference test during the JKW period revealed that global oil prices and the Chinese index affected upper and lower returns differently. However, this finding is inconsistent with the partial test, which confirmed the significant influence of the global index and macroeconomic variables on high returns. This discrepancy may be due to differences in the sensitivity of the analytical methods: the difference test emphasizes comparisons across groups as a whole, while the partial test focuses on the individual contribution of each variable (Wooldridge, 2012).

Comparing SBY's high returns with JKW's high returns reveals significant differences in their effects on global oil prices and the Chinese index. However, partial tests indicate that global indices, macroeconomics, and competitive resources influenced both periods. These differences can be explained by complex interactions among variables, whereby fluctuations in global commodity prices and international trade relations indirectly influence the market through domestic macroeconomic variables (Aloui et al., 2018).

For the low-return group, differences in effects were found for the global index and inflation. This contradicts the results of the partial tests, which showed that competitiveness only affected low returns under SBY while having an insignificant effect during the JKW period. The lack of competitiveness's effect during the JKW period may be attributed to the ongoing development of the workforce and infrastructure, which has not yet significantly impacted capital market performance (Sheridan, 1997).

From an investor's perspective, these differences convey an important message: investment decisions cannot rely solely on a single analytical method. The discrepancies between the difference test and the partial test demonstrate how a single interpretation can mislead investment strategies. Investors must consider global factors, such as oil prices and foreign stock indices, as well as domestic variables, such as inflation, monetary policy, and national competitiveness. Previous research has shown that combining global and domestic factors significantly improves the accuracy of stock return predictions (Kang et al., 2017).

The Mean Absolute Deviation (MAD) test results show that the JKW group has the smallest error value and the greatest stability. This stability is important for conservative investors who prioritize return certainty. However, it also presents an opportunity for aggressive investors to capitalize on positive trends during more stable periods (Poon & Granger, 2003).

Applying Arbitrage Pricing Theory (APT) reveals that multiple macroeconomic risk factors influence stock returns in the healthcare sector, with substantial variation across periods of political leadership. During SBY's leadership (2004–2014), simultaneous tests revealed significant joint influence (F-stat = 7.526 and 5.535, $p < 0.05$). However, only global indices and competitive resources exerted significant partial effects, and R^2 remained low (11–14%).

According to APT, this pattern indicates that idiosyncratic risk is higher than systematic risk. This is due to the context of Indonesia during this period, which included the 2008–2009 global financial crisis, BI rate volatility (6.5%–12.75%), rupiah depreciation (IDR 9,000–12,000/USD), and healthcare policy uncertainty as JKN remained unimplemented. In contrast, the JKW leadership (2014–2024) demonstrates dramatically higher explanatory power (R^2 = 70% for high returns and 40% for low returns), despite lower F-statistics. This reflects Indonesia's transformed macroeconomic landscape, which includes BI rate stabilization (4.25%–6.00%), JKN implementation covering over 240 million Indonesians, and sustained GDP growth of 5.0% annually from 2015 to 2019. Additionally, the effects of the 2020–2021 pandemic created an unprecedented link between macroeconomic conditions and healthcare performance. This is evidenced by the sector's 43% outperformance versus the JHSG during this period. This dramatic increase in R^2 validates the APT multi-factor framework while demonstrating that risk factor loadings are regime-dependent in emerging markets and require periodic model recalibration.

The difference-in-effects tests reveal critical asymmetries that extend the application of the APT. During the JKW period, world oil prices and the China Index had significantly different effects on high versus low returns ($p = 0.047$ and 0.018), reflecting Indonesia's energy subsidy reforms (2014–2015) and China's deepening trade integration (bilateral trade reaching USD 125 billion by 2023). These results contradict the standard APT assumption of constant betas, indicating state-dependent factor sensitivities. Cross-period comparisons show that global oil prices and the China Index differentiate between high returns in SBY and JKW ($p = 0.013$ and 0.001), while global indices and inflation differentiate between low returns ($p = 0.025$ and 0.007). These results suggest that APT factor structures are regime-dependent in emerging markets.

The mean absolute deviation (MAD) results validate the practical utility of the model. JKW high returns exhibit the lowest MAD (0.07594) compared to SBY's higher values (between 0.143 and 0.140). This indicates that APT-based factor models provide reliable investment timing signals during stable macroeconomic regimes, but they require supplementation with qualitative analysis during crisis periods. For investors, these findings prescribe adaptive strategies: systematic, factor-based approaches during JKW and fundamental, firm-specific analysis during SBY. For policymakers, the dramatic improvement in R^2 demonstrates that macroeconomic stability strengthens market efficiency by clarifying the linkages between fundamentals and prices. This supports policies that include monetary credibility, consistent healthcare regulation, and enhancing sector competitiveness through innovation incentives.

5. CONCLUSION

This study uses the Arbitrage Pricing Theory (APT) framework to examine the influence of macroeconomic factors on stock returns in the healthcare sector during the SBY and JKW leadership periods. The results reveal substantial, leadership-specific differences. During the SBY leadership period, simultaneous tests showed a significant joint influence of all macroeconomic factors. However, only global indices and competitive resources had significant individual effects, which had low explanatory power. This suggests an elevated level of idiosyncratic risk during the global financial crisis. Conversely, the JKW leadership period demonstrated dramatically higher model accuracy. Global indices and macroeconomic indicators significantly influenced high returns. This reflects Indonesia's improved macroeconomic stability and the implementation of the JKN. Cross-leadership comparisons show that world oil prices and the China Index differentiate high returns between leaderships, while global indices and inflation differentiate low returns. JKW's high returns exhibit superior predictive accuracy. These findings demonstrate that the healthcare sector's responsiveness to macroeconomic factors depends on the leadership in power. Investors should employ systematic, factor-based approaches during stable leadership and firm-specific fundamental analysis during volatile leadership. Policymakers should take note that improved model accuracy underscores the importance of macroeconomic stability, monetary policy credibility, and consistent healthcare regulation in strengthening market efficiency and sector performance. However, this study has several limitations. The analysis covers only two leadership periods and seven macroeconomic factors. It excludes microeconomic, sectoral policy, and non-economic variables. Additionally, monthly data aggregation may mask intra-month volatility and subsector heterogeneity. Additionally, the APT framework assumes linear relationships, whereas actual relationships may be nonlinear, particularly during crisis periods.

6. LIMITATIONS AND IMPLICATIONS

The results of this study suggest that the JKW high-return group is the most accurate model for prediction using the Arbitrage Pricing Theory (APT) approach. However, this research acknowledges several inherent limitations. The analytical approach only covers two terms of government: SBY and JKW, with the latter still ongoing. Therefore, the data does not reflect the full government cycle. This has the potential to affect the stability of the prediction results, especially if there are significant changes in economic policy or market dynamics during the remaining period.

Second, the independent variables are limited to certain macroeconomic factors and global indices. Thus, they do not fully describe the influence of microeconomic factors, sectoral policies, or non-economic variables, such as political factors, natural disasters, and geopolitical turmoil, which can affect the stock market.

Third, the APT method assumes a linear relationship between risk determinants and performance outcomes, but in reality, this relationship may be nonlinear or influenced by complex interactions between variables.

Despite these limitations, this study provides valuable insights for investors and researchers. Separating high and low returns in the APT model has been shown to improve stock price prediction accuracy, providing investors with a reference for developing more targeted investment strategies. Future research is expected to expand the observation period, add more diverse variables, and consider dynamic econometric models to capture more complex and realistic relationship patterns.

Overall, these findings underscore the importance of multi-method analysis in understanding the influence of macroeconomic and global factors on stock returns. For investors, the results suggest that governance periods and global dynamics contribute differently to risk and potential returns. An adaptive, data-driven investment approach that considers the interrelationships between variables is key to designing optimal strategies. Further research utilizing dynamic econometric models, such as VAR or GARCH, is recommended to capture long-term relationships, volatility, and the effects of global events on domestic markets.

REFERENCES

Alimusa, L. O., & Murini. (2018). Jurnal Mega Aktiva. *Jurnal Mega Aktiva*, *7*(April), 1–10.

Aloui, R., Gupta, R., & Miller, S. M. (2018). Uncertainty And Crude Oil Returns. *Energy Economics*, *74*, 823–836.

Anggraini, F. N., & Nurhadi. (2019). Indeks Dow Jones Industrial Average (Djia), Indeks Shanghai Stock Exchange (Sse), Kurs Usd/Idr Dan Bi Rate Berpengaruh Terhadap Indeks Harga Saham Gabungan (Ihsg) Di Bursa Efek Indonesia (Bei) Periode 2015-2018. *Jurnal Bisnis Indonesia*, *10*(1), 57–69.

Astuti, R., Lapian, J., & Rate, P. Van. (2016a). Pengaruh Faktor Makro Ekonomi Terhadap Indeks Harga Saham Gabungan (Ihsg) Di Bursa Efek Indonesia (Bei) Periode 2006-2015 Influences Of Macroeconomic Factors To Indonesia Stock. *Jurnal Berkala Ilmiah Efisiensi*, *16*(02), 399–406.

Astuti, R., Lapian, J., & Rate, P. Van. (2016b). *Pengaruh Faktor Makro Ekonomi Terhadap Indeks Harga Saham Gabungan (Ihsg) Di Bursa Efek Indonesia (Bei) Periode 2006-2015*.

Ayu Charissa, E., & Eduardus, T. (2021). *Pengaruh Perubahan Harga Emas Dan Nikel Terhadap Return Saham Pt. Aneka Tambang Tbk*.

Bodie, Z., Kane, A., & Marcus, A. (2021). *Investment: Twelfth Edition. United States Of America: Mcgraw-Hill Education.*

Bonga-Bonga, L., & Mpoha, S. (2025). Assessing The Extent Of Exchange Rate Risk Pricing In Equity Markets: Emerging Versus Developed Economies. *African Journal Of Economic And Management Studies*, *16*(1), 148–159. Https://Doi.Org/10.1108/Ajems-11-2023-0436

Brooks, C. (2019). Brooks, C. (2019). Introductory Econometrics For Finance (4th Edition). In C. Brooks (Ed.), *Introductory Econometrics For Finance*. Cambridge University Press. Https://Www.Cambridge.Org/Core/Books/Introductory-Econometrics-For-Finance/Frontmatter/13b3b6199b11f99b2f5735df9bf69c25

Chen, N.-F., Roll, R., & Ross, S. A. (1986). Economic Forces And The Stock Market. *The Journal Of Business*, *59*(3), 383–403.

Darmawan, S., & Saiful Haq, M. S. (2022). Analisis Pengaruh Makroekonomi, Indeks Saham Global, Harga Emas Dunia Dan Harga Minyak Dunia Terhadap Indeks Harga Saham Gabungan (Ihsg). *Jurnal Riset Ekonomi Dan Bisnis*, *15*(2), 95. Https://Doi.Org/10.26623/Jreb.V15i2.4381

Fama, E. F., & Schwert, G. W. (1977). Asset Returns And Inflation. *Journal Of Financial Economics*, *5*(2), 115–146. Https://Doi.Org/10.1016/0304-405x(77)90014-9

Forbes, K. J., & Rigobon, R. (2002). No Contagion, Only Interdependence: Measuring Stock Market Comovements. *Journal Of Finance*, *57*(5), 2223–2261. Https://Doi.Org/10.1111/0022-1082.00494

Garnia, E., Riadi, D. R., Tahmat, T., & Nainggolan, I. M. (2024). The Impact Of The Last Two Presidential Periods On The Performance Of The Indonesia Stock Exchanges: An Approach Of Arbitrage Pricing Theory. *Contemporary Economics*, *18*(3), 301–320. Https://Doi.Org/10.5709/Ce.1897-9254.539

Garnia, E., Tahmat, T., Riyadi, D. R., & Pasuma, R. A. (2023). *Dominant Macro Factors On The Performance Of Sharia Stocks In The Period Of Two Presidencies In Indonesia Faktor Makro Dominan Terhadap Kinerja Saham Syariah Pada Masa Dua Kepresidenan Di Indonesia*. *1*(1), 25–44.

Gujarati, D. N. (2015). *Basic Econometrica* (4th Ed.). The Mcgraw-Hill Companies, Inc.

Gusni, G., & Riantani, S. (2017). Penggunaan Arbitrage Pricing Theory Untuk Menganalisis Return Saham Syariah. *Jurnal Manajemen*, *9*(1), 68–84. Https://Doi.Org/10.31937/Manajemen.V9i1.598

Hamilton, J. D. (2009). *Causes And Consequences Of The Oil Shock Of 2007-08*. 2007–2015. Https://Doi.Org/10.3386/W15002

Humpe, A., & Macmillan, P. (2007). Can Macroeconomic Variables Explain Long Term Stock Market Movements? A Comparison Of The Us And Japan. *Ssrn Electronic Journal*. Https://Doi.Org/10.2139/Ssrn.1026219

Kang, S. H., Mciver, R., & Yoon, S. M. (2017). Dynamic Spillover Effects Among Crude Oil, Precious Metal, And Agricultural Commodity Futures Markets. *Energy Economics*, *62*, 19–32. Https://Doi.Org/10.1016/J.Eneco.2016.12.011

Mandelker, G., & Tandon, K. (1985). Common Stock Returns, Real Activity, Money, And Inflation: Some International Evidence. *Journal Of International Money And Finance*, *4*(2), 267–286. Https://Doi.Org/10.1016/0261-5606(85)90048-8

Nurhasanah, S., Puri, P. A., & Wilis, R. A. (2021). Pengaruh Harga Minyak Dunia, Harga Emas Dunia, Tingkat Inflasi, Kurs Rupiah, Indeks Dow Jones Dan Indeks Shanghai Composite Terhadap Indeks Harga Saham Gabungan Yang Terdaftar Dibursa Efek Indonesia Periode 2015-2019. *Jurnal Ilmiah Mea (Manajemen, Ekonomi, Dan Akuntansi)*, *5*(3), 2935–2949. Https://Doi.Org/Https://Doi.Org/10.31955/Mea.Vol5.Iss3.Pp2935-2949

Poon, S.-H., & Granger, C. W. J. (2003). Forecasting Volatility In Financial Markets: A Review. *Journal Of Economic Literature*, *41*(2), 478–539. Https://Doi.Org/10.1257/002205103765762743

Porter, M. E. (1990). *The Competitive Advantage Of Nations Harvard Business Review*.

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

Saputro, G. E., & Meirinaldi, M. (2021). Pengaruh Stabilitas Makro Ekonomi, Stabilitas Keamanan Dan Pertumbuhan Industri Strategis Terhadap Pertumbuhan Ekonomi. *Jurnal Ekonomi*, *23*(1), 1. Https://Doi.Org/10.37721/Je.V23i1.757

Sheridan, J. H. (1997). Economic Policy Reforms Going For Growth Interim Report. In *Industry Week* (Vol. 246, Issue 11). Https://Doi.Org/10.4024/15ra24a.Jbpc.24.03

Suriyani, N. K., & Sudiarta, G. M. (2018). Pengaruh Tingkat Suku Bunga, Inflasi Dan Nilai Tukar Terhadap Return Saham Di Bursa Efek Indonesia. *E-Jurnal*, *7*(6), 3172–3200.

Tinggi, S., Ekonomi, I., Maju, M., Indonesia, C., & Indonesia, J. C. (2022). *Yume : Journal Of Management Pengaruh Kualitas Layanan Terhadap Kepercayaan Dimediasi Tingkat Kepuasan Konsumen Pada Pt . Japfa Comfeed Indonesia , Tbk Cabang*

Makassar. *5*(2), 385–405. Https://Doi.Org/10.37531/Yume.Vxix.345
Wooldridge, J. M. (2012). *Introductory Econometrics*.
Yuwono, N. R., & Yulianto, S. (2022). Perbandingan Berbagai Metode Exponential Smoothing Untuk Peramalan Covid Di Indonesia. *It-Explore: Jurnal Penerapan Teknologi Informasi Dan Komunikasi*, *1*(2), 155–165. Https://Doi.Org/10.24246/Itexplore.V1i2.2022.Pp155-165

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