

Equity Research Using Technical Analysis: LQ45 Indonesian Energy Company Stocks After Covid-19

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Abstract: To analyze how to measure the performance of a stock and stock price with technical analysis using historical data, charts, bar charts, and candlestick diagrams through past market study methods, price movement patterns, price and volume correlations. Purposive sampling is used as a sampling method. The data analysis method used in this study is a technical analysis method in the form of a simple moving average (SMA) such as 7 days and 12 days as well as the rate of change (ROC), relative strength index (RSI). The research methodology used in this study is the data on the stock price movements of the energy sector of the LQ45 group which can be accessed through the website www.finance.yahoo.com. and obtained through the Indonesia Stock Exchange gallery at the Faculty of Business, Duta Wacana Christian University.

Keywords: Technical analysis, relative strength index (RSI), rate of change (ROC), simple moving average (SMA).

I. INTRODUCTION

Covid-19 virus disease (coronavirus disease 2019) is a disease caused by the SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) virus, or commonly known as the Covid-19 virus. The first case of the corona-virus occurred in Wuhan province in China and infected many people. The symptoms resembled influenza and were initially thought to be pneumonia. Covid-19 has caused investment conditions in Indonesia to decline, but investment conditions now after Covid-19 are getting better. Investment in Indonesia has experienced growth for PMDN (Domestic Investment) in the first quarter of 2022 increased by 25.1% from IDR 108.0 trillion in the first quarter of 2021 to IDR 135.2 trillion. Meanwhile, PMA (Foreign Direct Investment) investment has also increased. In the first quarter of 2022, it increased by 31.8% compared to the first quarter of 2021 from IDR 111.7 trillion to IDR 1147.2 trillion. This explanation is in line with the research of Christian et al, (2022) that investment in Indonesia has improved during the economic recovery after the Covid-19 pandemic, marked by an increase in SID growth from 1 million investors in 2017 to 3.88 million investors by

the end of 2020 with the criteria for young millennial investors (under 30 years old) as the dominant.

Agung et al, (2023) Explain that investment is an investment that will benefit in the future with a certain period of time. Financial investment in the form of bonds, stocks, and other securities is considered more attractive because it provides a higher return and does not require a long license. Over the last 10 years, investment in the capital market, especially stocks, has become widespread. In 2011 the JCI surpassed the 3,000 level which made it the highest record since the capital market opened. Shares are a type of financial investment with a high level of liquidity because it has a high level of fluctuation, so it has the principle of high risk high return. Where the benefits obtained are large but accompanied by a large risk as well, conversely when investors want the risk they receive is small then directly the benefits they get are also small. All of this is based on the time period used in investing.

In minimizing the risk of buying and selling shares, investors need analysis because stock price data is time series data that has high fluctuations so that there are no stocks that always experience continuous increases or decreases, alternating increases and decreases over time and causing

certain patterns (Rusyida and Pratama, 2020). In investing in the capital market, especially stocks, two analysis techniques are known, namely technical and fundamental analysis. Varshini, (2019) In fundamental analysis is theoretically used for the long term and the purpose of analyzing the economy, company value, industry, and company-based information in detail. Technical analysis studies the demand and supply of a market with its main purpose in studying technical indicators with various data bases. Technical analysis helps predict future stock price movements by analyzing past stock market price movements. Dian et al, (2016) with daily stock price data, investors can find out and estimate future stock prices using technical analysis.

Investment growth and the growth in the number of investors that occur are not followed by the ability to analyze stock prices. There are still many who do not have good enough investment literacy, namely the ability to analyze stock prices using technical analysis, because most investors only use fundamental analysis to determine the increase or decrease in stock prices in a company, namely with the company's financial statements (Reeves et al, 2019). Fundamental analysis does provide good decision results, but the volatility of stock prices is very volatile which causes the need for technical analysis to see specific stock price movements. Technical analysis is also as important as fundamental analysis (Christian et al, 2022). Hidayat, (2022) to get results in making more accurate stock buying or selling decisions, investors use a combination of several indicators in technical analysis. There are various indicators in technical analysis to help investors in making decisions. This study uses indicators with methods in the form of simple moving averages (SMA) such as 7 days and 12 days as well as the rate of change (ROC), relative strength index (RSI) which helps analyze day trading and short-term investment for accuracy in making decisions in investing in stocks. These indicators are used to check daily stock price movements in the stock market.

II. LITERATURE REVIEW

INVESTMENT

Investment means investment. Investment activities in one or more types of assets within a certain period of time with the aim of making a profit (Christian et al., 2022). Wibowo, (2019) provides an explanation of investment based on a complete dictionary of economics where investment is exchanging capital for various forms of wealth such as stocks or assets that are assumed to be maintained over a period of time in order to generate profits. According to Suteja and Gunardi, (2016) investment is a commitment to use some funds or resources to get benefits in the future period. Investment can also be interpreted as an amount of funds placed at this time in one or several assets in order to obtain future profits (Siregar, 2016).

TECHNICAL ANALYSIS

Technical analysis is a method used for valuation of stocks, commodities, or other securities by conducting statistical analysis of market activity in the previous period to make predictions of stock movements in the future period. Changes in volume and price can be observed by investors as a decision-making tool in buying or selling shares (Astthri et al., 2016). Technical analysis has several advantages, namely making it easier to determine trends with indicators that can be used as a reference, facilitating systematic and complex calculations with computer-aided charts so that they can be done quickly and precisely, getting complete information from the charts provided, making it easier to identify patterns using charts.

SHARES

Shares are proof of capital participation from an individual or business entity in a company (limited liability company) and for the capital participant has the right to own the assets and income of the company and has the right to attend the General Meeting of Shareholders (GMS) (Caroline and Ruskan, 2024). One of the advantages of stock investment is that it is easy to handle, very transparent and liquid, flexible, requires relatively small capital, has a relatively high return on investment, is easy to manage and taxed, and cannot be inherited indefinitely. In general, shares can be interpreted as ownership of a company or issuer in the form of securities. In this case, the acquisition of these securities requires capital participation by the owner of the capital (called an investor) by buying shares in large quantities at a fixed nominal price.

LQ 45 INDEX

A stock index is a collection of stocks with certain criteria using statistical measures of price changes. The LQ45 Index is one of the main stock indices of the Indonesia Stock Exchange (IDX) which consists of 45 highly liquid and carefully selected stocks. The stocks included in this index are selected based on certain criteria such as market capitalization, trading frequency, and number of trades. LQ45 stocks or the Indonesia Stock Exchange (IDX) Liquid Stock Index are the choice of many investors because the constituent stocks have a relatively low liquidity risk and tend to avoid the risk of being "trapped and fried". However, there are still many investors who do not understand the LQ45 index. According to (Santoso and Sukamulja, 2020) Currently, the trading value and market capitalization of the regular LQ45 index market reaches around 70%, LQ45 is a stock index of 45 companies that meet certain criteria on the Indonesia Stock Exchange (IDX).

CAPITAL MARKETS

The capital market is a market for various long-term financial instruments with a maturity of more than one year, such as stocks, bonds (bonds), investment funds, securities and various securities derivative products. According to Law Number 8 of 1995 concerning Capital Markets "The capital market is a public offering of shares of public companies and

securities trading in connection with the securities issued, as well as securities trading institutions and professions in their activities related to securities. The capital market is a connecting platform used by companies or issuers if they need capital for business development (Abi, 2016).

RSI (RELATIVE STRENGTH INDEX)

J.Welles Wilder is a person who developed the RSI (Relative Strength Index) indicator method. According to Pramono, (2013) RSI is a momentum oscillator in measuring changes in price movements. The RSI indicator can determine the right entry time based on overbought and oversold levels and detect when there is a change in trend direction by observing divergence in stock price movements. RSI in its movement has a range of numbers from 0 to 100. When the RSI gives a value above the level of 70 then the stock is considered overbought, but when the RSI gives a value below 30 then the stock is considered oversold. Because of the shifts that occur in bull markets and bear markets, usually level 80 becomes the overbought level in bull markets and level 20 becomes the oversold level in bear markets. This explanation is in line with Wilder, (1978) where the RSI ratio is on a scale of 0 to 100, if for a certain period of time the RSI indicator explains that there is no price change then the RSI will remain in an overbought or oversold condition.

ROC (RATE OF CHANGE)

ROC (Rate Of Change) is one of the many indicator methods in technical analysis that is one of the most popular methods for traders and market analysts today to use as an indicator (Anwar, 2009). This indicator can be used stand-alone for simple purposes and can also be combined with other indicator methods to produce an effective indicator. By combining ROC with other indicators, it becomes efficient due to the ability of this indicator method to describe the trend of stock price movements and can provide signals to market participants when making investment decisions when a trend has upward or downward momentum. The basic idea of the ROC (Rate Of Change) method is on the condition of whether or not the stock price changes, when changes in stock prices increase rapidly, the potential for the trend to persist will also be greater. Conversely, when the increase in stock price changes decreases in speed, the potential for changing the trend will be even greater. In the calculation mechanism is to compare the current closing price (t) with the previous closing (t-1) in a certain period where the calculation results can be depicted in the form of a graph and from the graph we can see the momentum of the rising or falling trend along with the signal given, namely the sell or buy signal.

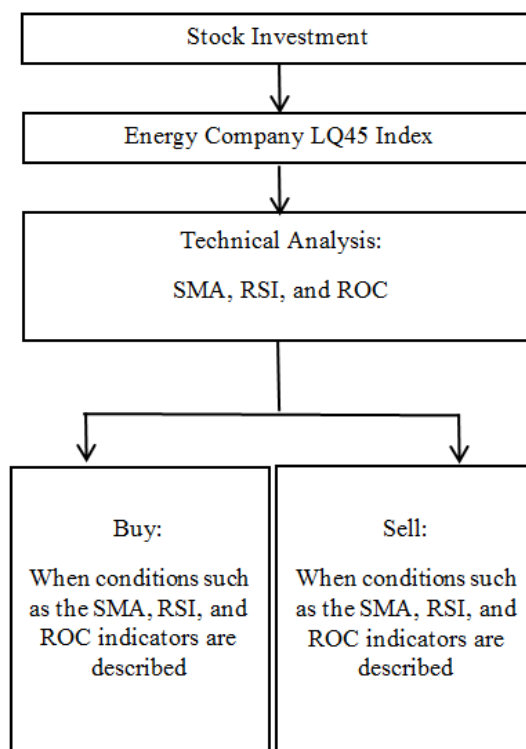
SMA (SIMPLE MOVING AVERAGE)

Moving Average (MA) is the average price of the price movement value in knowing the ternd on the market within a certain period range. The average price value is very important because it is used to show the position that determines the current price is below or above to show the cheap or expensive current stock price compared to the price in the previous

period. Moving Average (MA) is a guideline to determine the right time to buy or sell shares. Buying and selling behavior in the stock market can also be shown using Moving Average (MA). Schlotmann and Czubatinski, (2019) explain Moving Average can help identify the trend of a stock price movement. Asthri et al, (2016) Moving Average is an indicator of technical analysis that can smooth price movements by filtering out fluctuations in stock prices that are random, trend-following and lagging because they are based on prices that have occurred previously. Meanwhile, Simple Moving Average (SMA) is an indicator used to analyze the price development of financial instruments over a certain period of time. SMA helps determine the direction of price movement by calculating the average closing price over a certain period.

RESEARCH MODEL

Furthermore, the research model is presented in Figure 1.



III. RESEARCH METHODS

The method in the analysis uses descriptive (Sugiyono, 2016). Where secondary data is analyzed descriptively with simple moving average (SMA) indicators such as 7 days and 12 days and the rate of change (ROC), relative strength index (RSI). Traders often use SMA for long-term analysis and confirmation of price trends. The SMA time can be customized according to your needs, for example, 5 (1 week), 20 (1 month), 60 (3 months) or 120 (6 months). The longer the period used, the slower the SMA line moves against the price. The way to calculate the ROC is to compare the current price with the price of the previous period and then calculate the percentage. You can customize the reference period. RSI

values above 70 indicate excessive buying interest, so speculators should consider selling. RSI values below 30 indicate additional selling interest. In principle, if most of the daily value movements are in one direction, then it is an extreme sign and the price is likely to reverse.

The population in this study are energy sub-sector companies listed on the LQ45 index on the Indonesia Stock Exchange (BEI). The year period in this study is 2023-2024 with the number of companies is 8 (MEDC, INDY, HRUM, ADRO, ITMG, AKRA, PTBA, and PGAS). The sample selection in this study used purposive sampling. This method is a sampling technique used by researchers when researchers have certain considerations for taking samples or determining samples for specific purposes (Gunawan, 2013). The criteria for selecting this research sample are: (1) companies that become samples are energy sub-sector companies on the IDX for the period 2023-2024. (2) Companies that are sampled are companies that have conducted Initial Public Offering (IPO), (3) companies that are sampled are companies listed on the LQ45 index (4) Companies that experience bearish (downward trend) and bullish (upward trend) conditions, (5) companies have stock activities that have continuous transactions and are not suspended (stopped) during the 2023-2024 period. based on these criteria, eight companies were obtained as samples. The data collection technique in this study is to use secondary data. This secondary data can be obtained at the Indonesia Stock Exchange Gallery located at the Faculty of Business, Duta Wacana Christian University and at www.finance.yahoo.com. and www.idx.co.id.

IV. RESEARCH AND INTERPRETATION

In analyzing the price movement of one year's data with indicators from technical analysis, namely Simple Moving Average (SMA), Relative Strength Index (RSI), Rate Of Change (ROC) to identify stock price trends of companies in the energy sub-sector listed on the IDX and the LQ45 Index and explain the importance of studying analysis in the Indonesian stock market and assist investors in making investment decisions based on technical analysis indicators.

Investor interest in energy stocks is relatively high in the Indonesian stock market. Although fluctuating like other sectors, the energy sector often shows the strongest positive signals. By mid-2023, only the energy sector (IDX ENERGY) and infrastructure sector (IDX INFRA) will be green, while the other 9 industry indices will be red. If smart people are interested in buying or investing in energy providers, here's a list of stocks to choose from.

The energy sub-sector companies in the LQ45 and IDX that are considered for analysis are

MEDC
INDY
HRUM
ADRO
ITMG
AKRA
PTBA
PGAS

MEDC (PT Medco Energi Internasional Tbk)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	1.395,00	1.072,00	1.085,00	1,71	51,90
01/02/2023	1.150,00	1.377,00	1.316,00	15,74	66,20
01/03/2023	1.010,00	1.107,00	1.117,00	3,58	48,60
01/04/2023	1.010,00	974,00	940,00	17,61	57,00
01/05/2023	905	1.027,00	1.035,00	(6,71)	41,00
01/06/2023	890	911,00	900,00	6,38	47,70
01/07/2023	1.130,00	908,00	905,00	(1,10)	46,10
01/08/2023	1.070,00	1.088,00	1.017,00	16,67	62,80
01/09/2023	1.610,00	1.109,00	1.091,00	(17,33)	75,40
01/10/2023	1.275,00	1.594,00	1.586,00	(2,03)	59,50
01/11/2023	1.155,00	1.342,00	1.422,00	(22,61)	35,10
01/12/2023	1.155,00	1.138,00	1.141,00	(0,16)	41,00

Table 4.1

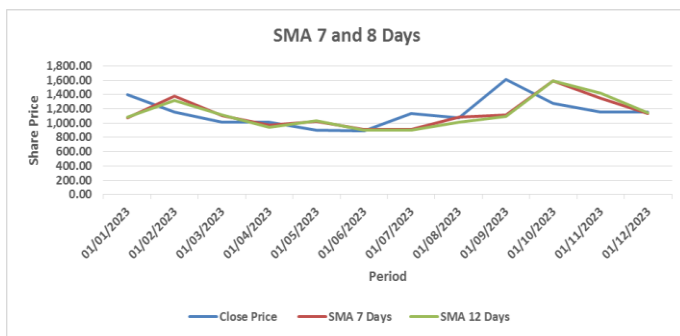


Chart 4.1

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.1 and chart 4.1 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

The 7 Days SMA in February, April, and June through October moves above the 12 Days SMA so the indicator gives a Buy signal. While the 7 Days SMA for January, March, May, and December moves below the 12 Days SMA, the indicator gives a Sell signal.

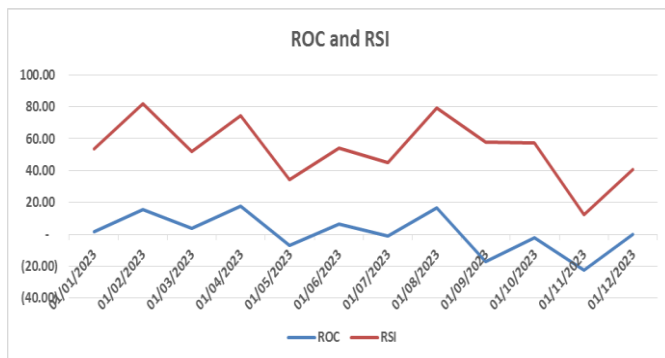


Figure 4.2

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.1 and graph 4.2 ROC (Rate Of Change) in May, July, and September to December experiencing Oversold, the indicator gives a buy signal. Apart from the months of May, July, and September to December experiencing Overbought, the indicator gives a Sell signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.1 and graph 4.2 is known in September at 75.40 points, indicating an Overbought condition.

INDY (PT Indika Energy Tbk)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	2.410,00	2.773,00	2.827,00	(5,19)	34,00
01/02/2023	2.300,00	2.461,00	2.512,00	(7,25)	35,50
01/03/2023	2.410,00	2.263,00	2.259,00	2,35	46,00
01/04/2023	2.600,00	2.289,00	2.192,00	17,44	62,20
01/05/2023	1.715,00	1.792,00	1.851,00	(5,19)	31,20
01/06/2023	1.910,00	1.927,00	1.844,00	(3,13)	48,80
01/07/2023	1.975,00	1.927,00	1.844,00	(3,13)	48,80
01/08/2023	2.000,00	2.083,00	2.070,00	(4,51)	41,20
01/09/2023	2.200,00	2.091,00	2.078,00	(3,82)	41,10
01/10/2023	1.815,00	2.024,00	2.053,00	(3,13)	48,80
01/11/2023	1.475,00	1.800,00	1.875,00	(18,22)	21,50
01/12/2023	1.435,00	1.513,00	1.513,00	(0,39)	31,00

Table 4.2

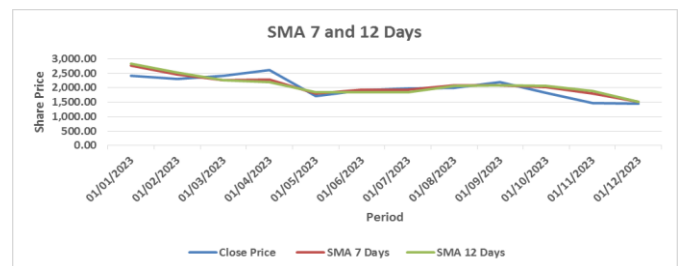


Chart 4.3

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.2 and chart 4.3 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

If the 7 Days SMA for April and June through September moves above the 12 Days SMA, the indicator gives a Buy signal. While the 7 Days SMA for other than April and June through September moves below the 12 Days SMA, the indicator gives a Sell signal.

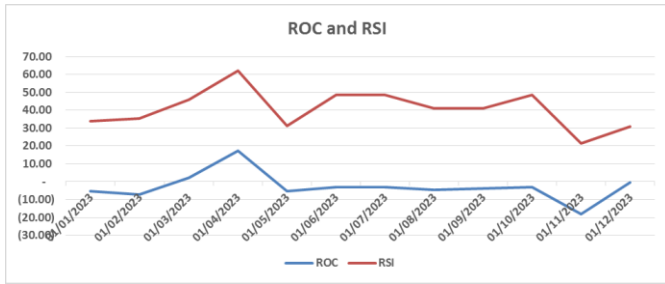


Chart 4.4

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.2 and graph 4.4 ROC (Rate Of Change) in March and April experiencing Overbought, the indicator gives a buy signal. Apart from March and April experiencing Oversold, the indicator gives a Buy signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.2 and graph 4.4 is known in January to December there are no points above 70 and below 30, so nothing indicates an Overbought or Oversold condition.

HRUM (PT Harum Energy Tbk)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	1.730,00	1.626,00	1.653,00	(1,88)	41,00
01/02/2023	1.630,00	1.714,00	1.721,00	1,44	59,60
01/03/2023	1.460,00	1.610,00	1.614,00	3,33	53,20
01/04/2023	1.510,00	1.453,00	1.453,00	2,39	46,20
01/05/2023	1.410,00	1.510,00	1.533,00	(5,67)	41,00
01/06/2023	1.420,00	1.336,00	1.311,00	14,24	57,70
01/07/2023	1.660,00	1.435,00	1.447,00	2,36	60,20
01/08/2023	1.560,00	1.644,00	1.594,00	12,81	64,70
01/09/2023	1.885,00	1.592,00	1.601,00	0,02	48,70
01/10/2023	1.615,00	1.826,00	1.809,00	2,39	57,00
01/11/2023	1.385,00	1.639,00	1.682,00	(13,73)	33,40
01/12/2023	1.335,00	1.426,00	1.429,00	(0,46)	34,10

Table 4.3

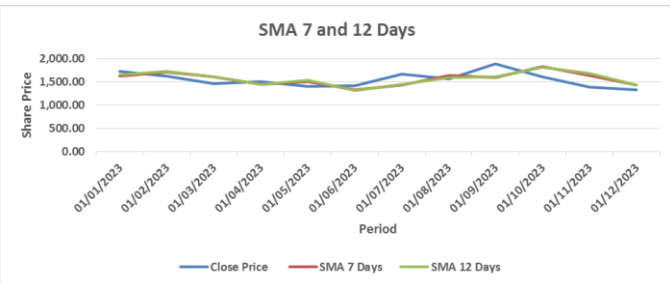


Chart 4.5

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.3 and chart 4.5 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

If the 7 Days SMA for January, June, August, and October moves above the 12 Days SMA, the indicator gives a Buy signal. Whereas the 7 Days SMA for other than January, June, August, and October moves below the 12 Days SMA, the indicator gives a Sell signal.

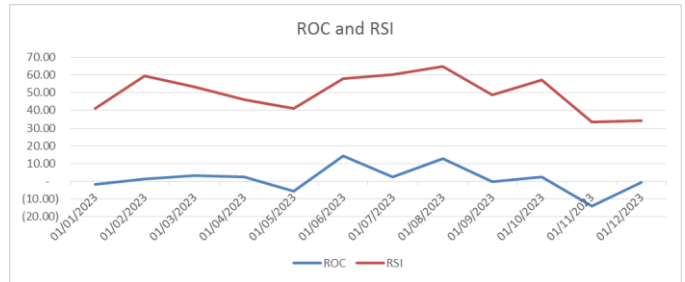


Chart 4.6

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.3 and graph 4.6 ROC (Rate Of Change) in January, May, November, and December experiencing Oversold, the indicator gives a buy signal. Apart from the months of January, May, November, and December experiencing Overbought, the indicator gives a Sell signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.3 and graph 4.6 is known in January to December there are no points above 70 and below 30, so nothing indicates an Overbought or Oversold condition.

ADRO (PT Adaro Energy Indonesia)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	2.960,00	1.626,00	1.653,00	(5,12)	41,00
01/02/2023	2.990,00	1.721,00	1.721,00	0,89	59,00
01/03/2023	2.900,00	1.616,00	1.616,00	3,21	53,80
01/04/2023	3.130,00	1.451,00	1.451,00	1,82	44,90
01/05/2023	2.040,00	1.512,00	1.537,00	(6,98)	39,10
01/06/2023	2.230,00	1.340,00	1.311,00	13,86	58,30
01/07/2023	2.410,00	1.440,00	1.447,00	2,75	62,20
01/08/2023	2.670,00	1.639,00	1.592,00	12,47	64,70
01/09/2023	2.850,00	1.596,00	1.601,00	(0,03)	49,40
01/10/2023	2.560,00	1.818,00	1.809,00	0,43	55,10
01/11/2023	2.620,00	1.673,00	1.698,00	(13,73)	34,10
01/12/2023	2.380,00	1.431,00	1.431,00	(0,46)	34,80

Table 4.4

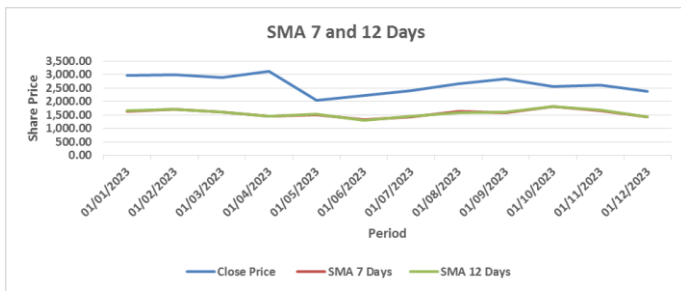


Chart 4.7

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.4 and chart 4.7 the 7 Days SMA, 12 Days SMA, and Close Price do not move in the same direction for 12 months.

If the 7 Days SMA in June, August, and October moves above the 12 Days SMA then the indicator gives a Buy signal. Whereas the 7 Days SMA for other than June, August, and October moves below the 12 Days SMA, the indicator gives a Sell signal.

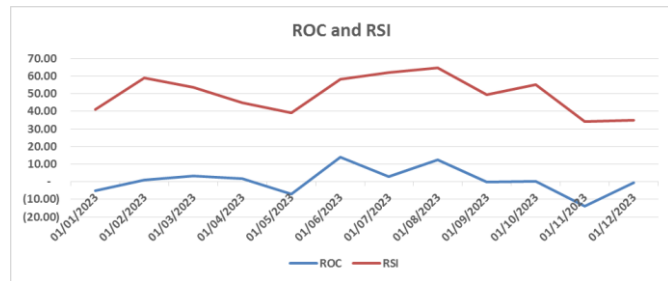


Chart 4.8

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.4 and graph 4.8 ROC (Rate Of Change) in January, May, September, November, and December experiencing Oversold, the indicator gives a buy signal. Apart from the months of January, May, September, November, and December experiencing Overbought, the indicator gives a Sell signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.4 and graph 4.8 is known in January to December there are no points above 70 and below 30, so nothing indicates an Overbought or Oversold condition.

ITMG (PT Indo Tambangraya Megah Tbk)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	36.200,00	40.251,00	39.895,00	(3,06)	40,20
01/02/2023	37.200,00	36.041,00	36.219,00	(0,87)	41,70

01/03/2023	39.400,00	36.279,00	35.745,00	4,83	57,80
01/04/2023	33.300,00	39.362,00	38.947,00	3,07	60,90
01/05/2023	22.125,00	33.195,00	35.152,00	(16,20)	30,90
01/06/2023	24.125,00	23.352,00	24.242,00	(10,94)	22,50
01/07/2023	27.200,00	24.064,00	24.005,00	1,76	45,50
01/08/2023	28.925,00	27.740,00	26.851,00	7,01	57,10
01/09/2023	28.975,00	29.163,00	28.926,00	3,51	61,70
01/10/2023	26.525,00	28.689,00	28.867,00	(3,93)	42,50
01/11/2023	24.550,00	26.614,00	27.147,00	(9,63)	29,40
01/12/2023	25.650,00	24.894,00	25.191,00	(3,93)	31,70

Table 4.5

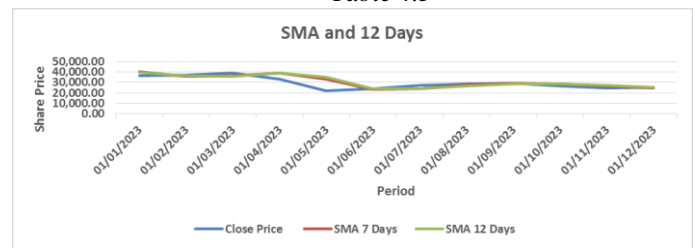


Chart 4.9

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.5 and chart 4.9 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

SMA 7 Days in January, March, April, July through September moves above SMA 12 Days then the indicator gives a Buy signal. While the 7 Days SMA for other than January, March, April, July through September moves below the 12 Days SMA, the indicator gives a Sell signal.

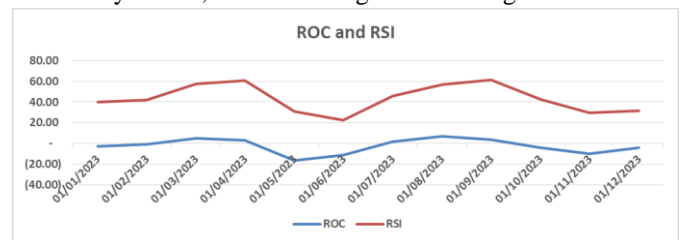


Chart 4.10

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.5 and graph 4.10 ROC (Rate Of Change) in March, April, July, and August experiencing Overbought, the indicator gives a Sell signal. Apart from March, April, July, and August experiencing Oversold, the indicator gives a Sell signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.5 and graph 4.10 is known in November there are points below 30, indicating an Oversold condition, so the signal given is buy.

AKRA (PT AKR Corporindo Tbk)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	1.310,00	1.400,00	1.387,00	0,89	47,80
01/02/2023	1.385,00	1.361,00	1.341,00	5,03	55,30
01/03/2023	1.550,00	1.369,00	1.352,00	6,41	60,60
01/04/2023	1.620,00	1.561,00	1.492,00	11,92	65,10
01/05/2023	1.365,00	1.604,00	1.597,00	(0,03)	62,90
01/06/2023	1.420,00	1.376,00	1.356,00	1,81	40,30
01/07/2023	1.385,00	1.473,00	1.466,00	(3,70)	44,00
01/08/2023	1.400,00	1.379,00	1.389,00	(6,00)	34,30
01/09/2023	1.545,00	1.378,00	1.345,00	16,06	75,70
01/10/2023	1.490,00	1.487,00	1.480,00	2,27	58,30
01/11/2023	1.435,00	1.460,00	1.452,00	4,10	61,40
01/12/2023	1.475,00	1.439,00	1.449,00	(1,53)	45,30

Table 4.6

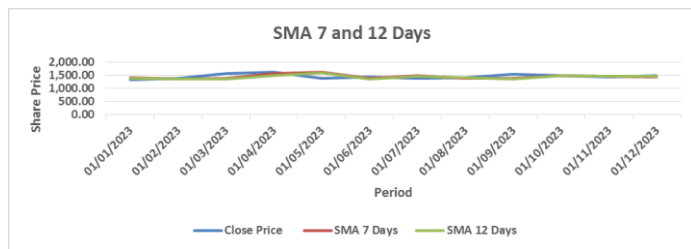


Chart 4.10

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.6 and chart 4.10 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

The 7 Days SMA for January through July and September through November moves above the 12 Days SMA and the indicator gives a Buy signal. While the 7 Days SMA for other than January to July and September to November moves below the 12 Days SMA, the indicator gives a Sell signal.

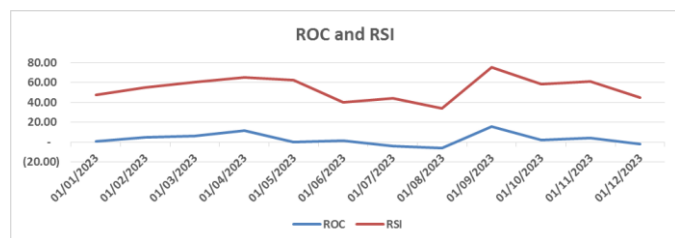


Chart 4.11

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.6 and graph 4.11 ROC (Rate Of Change) in May, July, August, and December experiencing Oversold, the indicator gives a Buy signal. Apart from the months of May, July, August, and December experiencing Overbought, the indicator gives a Sell signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.5 and graph 4.11 is known in November there are points above 70, indicating an Overbought condition, so the signal given is Sell.

PTBA (PT Bukit Asam Tbk)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	3.400,00	3.691,00	3.731,00	(2,55)	46,10
01/02/2023	3.860,00	3.448,00	3.448,00	(1,17)	43,00
01/03/2023	3.990,00	3.702,00	3.604,00	11,20	72,00
01/04/2023	4.140,00	3.864,00	3.818,00	5,02	63,40
01/05/2023	3.060,00	4.015,00	3.991,00	(4,61)	47,70
01/06/2023	2.680,00	3.049,00	3.130,00	1,58	39,00
01/07/2023	2.770,00	3.361,00	3.517,00	(14,55)	30,40
01/08/2023	2.860,00	2.829,00	2.800,00	(1,17)	37,50
01/09/2023	2.800,00	2.540,00	2.540,00	2,27	50,00
01/10/2023	2.480,00	2.933,00	2.904,00	3,24	50,00
01/11/2023	2.420,00	2.823,00	2.040,00	(0,48)	41,40
01/12/2023	2.440,00	2.436,00	2.426,00	0,82	43,00

Table 4.7

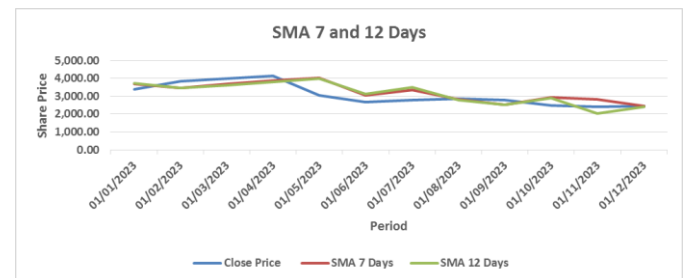


Chart 4.12

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.7 and chart 4.12 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

The 7 Days SMA in March, April, May, August, and October through December moves above the 12 Days SMA and the indicator gives a Buy signal. While the 7 Days SMA for other than March, April, May, August, and October to December to September moves below the 12 Days SMA, the indicator gives a Sell signal.

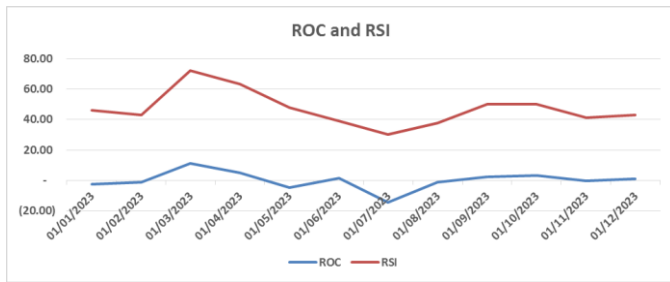


Chart 4.13

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.7 and graph 4.13 ROC (Rate Of Change) in March, April, June, September, October, and December experiencing Overbought, the indicator gives a Sell signal. Apart from the months of March, April, June, September, October, and December experiencing Oversold, the indicator gives a Buy signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.7 and graph 4.13 is known in March there are points above 70, indicating an Overbought condition, so the signal given is Sell.

PGAS (PT Perusahaan Gas Negara)

Date	Close Price	SMA 7 Days	SMA 12 Days	ROC	RSI
01/01/2023	1.545,00	3.691,00	3.725,00	(2,55)	46,10
01/02/2023	1.565,00	3.442,00	3.442,00	0,48	43,00
01/03/2023	1.380,00	3.691,00	3.615,00	11,20	72,00
01/04/2023	1.430,00	3.887,00	3.818,00	5,02	63,40
01/05/2023	1.430,00	4.037,00	3.996,00	(5,98)	46,10
01/06/2023	1.305,00	3.048,00	3.124,00	0,89	42,20
01/07/2023	1.365,00	3.357,00	3.490,00	(27,30)	28,80
01/08/2023	1.375,00	2.827,00	2.798,00	0,20	35,90
01/09/2023	1.375,00	2.926,00	2.897,00	2,27	50,80
01/10/2023	1.255,00	2.816,00	2.845,00	(1,86)	41,40
01/11/2023	1.115,00	2.595,00	2.630,00	(12,17)	20,90
01/12/2023	1.130,00	2.438,00	2.415,00	0,20	43,70

Table 4.8

ANALYSIS AND INTERPRETATION

The blue line is the Close Price, the orange line is the 7 Days SMA, the gray line is the 12 Days SMA.

Based on table 4.8 and chart 4.14 the 7 Days SMA, 12 Days SMA, and Close Price move in the same direction for 12 months.

If the 7 Days SMA for the months of March through May, August, September, and December moves above the 12 Days SMA, the indicator gives a Buy signal. While the 7 Days SMA for other than March to May, August, September, and December to September moves below the 12 Days SMA, the indicator gives a Sell signal.

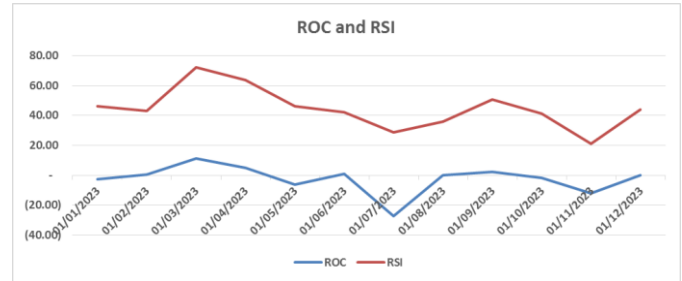


Chart 4.15

ANALYSIS AND INTERPRETATION

The blue line is ROC (Rate Of Change) and the orange line is RSI (Relative Strength Index)

Based on table 4.8 and graph 4.15 ROC (Rate Of Change) in January, May, July, October, and November experiencing Oversold, the indicator gives a Buy signal. Apart from the months of January, May, July, October, and November experiencing Overbought, the indicator gives a Sell signal.

ROC contains Overbought and Oversold indications. Overbought if the value of the ROC is above 0 and Oversold if the ROC value is below 0.

RSI (Relative Strength Index) in table 4.8 and graph 4.15 is known in March there are points above 70, indicating an Overbought condition, so the signal given is Sell. And in July there are points below 30 then there is an indication of Oversold conditions, then the signal given is Buy.

V. CONCLUSIONS AND SUGGESTIONS

CONCLUSIONS

If the stock price appears to be rising, it's a good idea to buy the stock in that season. Technical analysis provides a clear picture of stock movements that allows traders to make decisions for profit. Line chart analysis allows investors to think about short-term and long-term investments in the market. A large number of buyers reflects high demand for the stock and signals a rise in the stock price, and conversely, a large number of sellers signals a fall in the stock price. The technical approach to investing essentially reflects the idea that price movements are determined by investors' hard attitudes towards various economic and monetary forces. Technical analysis works best in the current market, while the

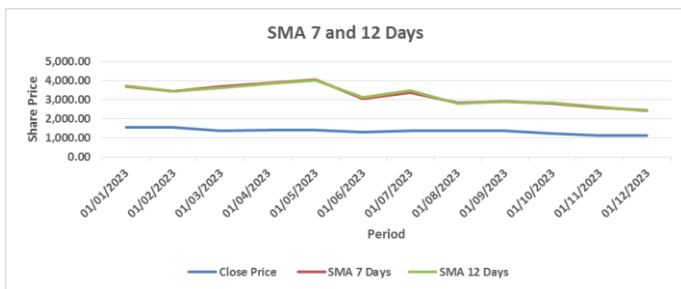


Chart 4.14

futures market and the stock market work best. Bonds perform better in the stock market than in the foreign exchange market. This paper discusses the features of technical analysis and its indicators. Technical analysis is a widely known and very useful tool for analyzing the behavior of stock prices in the world. The stock market is challenging, rewarding, and worthwhile for savvy investors who should be able to learn technical analysis. Trading in a volatile market is risky because stocks can go down and up at any time. It is sometimes difficult to decide when to enter and when to exit a stock.

ADVICE

If the price shows a slight uptrend, it is advisable to buy the stock in that period and sell it later when the price goes down. The swings are big. Therefore, speculators are advised to anticipate the stock price and invest depending on the risk and return. It is recommended to invest in the long term to reduce risks in a volatile market. Investors should buy stocks of different companies if they can offset losses on one stock with gains made on another. In addition to technical analysis, investors should study the daily behavior of stocks and issues related to the company and industry. Technical studies using ROC can be used to see the strength of the decline in stock prices and advise investors to use ROC to make profitable trades. Technical indicators such as RSI, 7-day SMA, and 12-day SMA provide excellent buy or sell signals and indicate the stock price.

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