

TESTING THE MOVING AVERAGE CONVERGENCE DIVERGENCE RULES USING SUCORINVEST SHARIA EQUITY FUND

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Abstract

The article testing Moving Average Convergence Divergence on Sucorinvest Sharia Equity Fund. We set MACD using 60-period for fast EMA, 130-period for slow EMA, and 45-period for Signal. The rule is histogram of MACD crosses zero line from below indicate buy signal and crosses zero line from above indicate sell signal. We use 8-year data from pusatdata.kontan.co.id. The result is MACD rule generate more profit than buy-and-hold strategy.

Keywords:

Technical analysis, Moving Average Convergence Divergence, Sucorinvest Sharia Equity Fund.

INTRODUCTION

Technical analysis studies the historical data such as price trends, patterns, and/or any other clues for predicting the future price movements. Among the financial practitioners, it has been increasingly popular over recent years to make investment decisions (Neely et al., 1997; Taylor & Allen, 1992). It has long been a controversial issue that technical trading rules can generate excess returns. To examine the performance of various trading rules, a number of studies have been carried out. Eugene F. Fama showed that the study of historical prices cannot predict future prices (Fama, 1965). Salih N. Neftci found that market indicators cannot help to predict future prices when economic time series are assumed to be Gaussian (Neftci, 1991). Technical trading rules can show some predictability when prices are nonlinear. Hudson et al. demonstrated that under a costly trading environment, moving averages and trading range breakout rules are not better than the buy-and-hold strategy (Hudson et al., 1996).

There are also findings showing the opposite, although these studies are not in favor of technical trading rules. Jack L. Treynor and Robert Ferguson argued that historical prices can help to generate higher returns, when the nonprice information is taken into account (Treynor & Ferguson, 1985). Brock et al. tested the buy-and-hold strategy outperformed by trading range breakout and the moving average rules on the Dow–Jones Industrial Average (Brock et al., 1992). Mills showed a similar result for the FT30 index (Mills, 1997). Kwon and Kish documented that the buy-and-hold strategy in the NYSE beat the technical rules (Kwon & Kish, 2002). In this article,

MACD will be evaluated to see if its associated rules are profitable when compared with the buy-and-hold strategy on Sucorinvest Sharia Equity Fund.

DATA

The data series under study is Sucorinvest Sharia Equity Fund. Sucorinvest Sharia Equity Fund aims to obtain optimal growth in investment value in the long term by investing in equity and debt securities and Islamic money market instruments in accordance with the principles of Islamic Sharia and prevailing laws and regulations in Indonesia (Sucorinvest Sharia Equity Fund, 2021). Daily closing prices within 11-Nov-2013 until 21-Apr-2021 are adopted for analysis. The data collected from pusatdata.kontan.co.id (Reksa Dana SUCORINVEST Sharia Equity Fund, 2021).

TRADING RULES

The MACD is constructed based on the moving averages. It is calculated by subtracting the longer exponential moving average (EMA) from the shorter EMA (*How to Calculate MACD in Excel*, 2013). The EMA is defined as:

$$EMA_t = \left(P_t \times \left(\frac{2}{(n+1)} \right) \right) + \left(EMA_{t-1} \times \left(1 - \left(\frac{2}{(n+1)} \right) \right) \right)$$

$$MACD = EMA_{fast} - EMA_{slow}$$

$$Signal = EMA_{MACD}$$

$$Histogram = MACD - Signal$$

Where EMA_t is the exponential moving average at time t , n is the number of periods for EMA. The initial EMA is the n -day simple moving average of the series. In this article, we focus our attention on the 60 and 130-day EMAs, which are 5x of the most commonly used short and long-period EMAs. For the Signal, this article using 45-day. A buy signal is triggered when the Histogram crosses the zero line from below, while a sell signal is triggered when the MACD crosses the zero line from above.

METHOD

Buy-sell strategy based on MACD will be evaluated to see if its associated rules are profitable when compared with the buy-and-hold strategy. This article using Excel 2013 for parsing data, simulating, and analyzing. First, we calculate EMA60, EMA120, MACD, Signal (EMA45 of MACD), and Histogram. Then, for each histogram crosses the zero line from below, we note the price in buy column. For each crosses the zero line from above, we note the price in sell column. Last, we subtract each sell price with the buy price.

For buy-and-hold strategy, we use same buying price at first buy signal from MACD, and same selling price at last sell signal from MACD. Then we subtract sell price with buy price.

EMPIRICAL RESULTS AND CONCLUSION

From 11-Nov-2013 until 21-Apr-2021, MACD 60.130.45 generate 10 buy and sell signal. First buy signal at 18-Aug-2014, and last sell signal 03-Mar-2021.

Table 1. Detail Transaction

Trx	Buy Date	Sell Date	Buy Price	Sell Price	Profit/Loss
1	18-Aug-2014	16-Sep-2014	1131.97	1116.53	-15.44
2	29-Jan-2015	24-Mar-2015	1069.73	1055.3	-14.43
3	21-Oct-2015	05-Oct-2016	853.54	1047.46	193.92
4	20-Oct-2016	18-Nov-2016	1078.5	1068.72	-9.78
5	24-Mar-2017	29-May-2017	1184.21	1194.97	10.76
6	20-Oct-2017	08-Dec-2017	1278.28	1255	-23.28
7	03-Jan-2018	12-Apr-2018	1327.52	1546.1	218.58
8	23-Apr-2018	24-Apr-2018	1578.69	1567.03	-11.66
9	11-Jan-2019	31-Oct-2019	1536.63	1662.03	125.4
10	17-Jun-2020	03-Mar-2021	1194.69	2033.24	838.55
Summary					1312.62

Overall, there are 5 loss transaction and 5 profit transaction. But, the average transaction generate profit Rp131.262. Highest profit in 03-Mar-2021 is Rp838.55 when buy at Rp1194.69 then sell at Rp2033.24. Highest loss in 08-Dec-2017 is – Rp23.28 when buy at Rp1278.28 then sell at Rp1255. Total profit generated by MACD is Rp1387.21 and total loss –Rp74.59.

Table 2. The return of MACD rule

Remarks	Value
Count	10
Max	838.55
Min	-23.28
Average	131.262
Loss Count	5
Profit Count	5
Total Loss	-74.59
Total Profit	1387.21
Avg. Loss	-14.918
Avg. Profit	277.442

For buy and hold strategy, buy in 18-Aug-2013 at Rp1131.97 then sell in 03-Mar-2021 at Rp2033.24 generate profit Rp901.27, it is Rp411.35 less than profit that generated by MACD rule. To conclude, we find that the buy-and-hold strategy outperformed by the MACD rule. Such a conclusion is, in general, robust to the choice of the sample period.

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