

THE ECONOMIC VIABILITY OF SOME COMMONLY USED TECHNICAL ANALYSIS TOOLS IN THE MALAYSIAN SECURITIES MARKET

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1. INTRODUCTION

Analysing stock market information using computer is no more the domain of sophisticated investors and investment analysts of established brokerage firms. In the present sophisticated technological era, a variety of technical analysis software is available to investors at reasonable cost. Software such as AIQ, SuperCharts, Metastock and many others are available to help investors convert the available information into technical indicators or signals in a variety of forms (such as charts, graphs, bar charts etc.) to guide them in their investment decisions. There must be some economic rationale for investors to invest in these tools to help them make investment decisions or is it just a vogue in the securities industry to use sophisticated measures to show one's prudence? The economic rationale or viability can only be justified if the tools do guide investors to make profitable decisions that are better than those earned on a market portfolio proxied by the KLSE Composite Index (KLSE CI). This paper presents some evidence on the economic viability of some technical tools commonly used repetition by investors in the Malaysian securities market.

2. APPROACHES TO STOCK VALUATION

Generally, there are three approaches to share valuation, namely the fundamental, the technical and the efficient market approach.

The fundamentalist believes that all stocks have an intrinsic value. At any moment in time, the market price of a stock can be above or below its intrinsic value and will eventually adjust to its intrinsic value. The intrinsic value is determined using fundamental factors such as

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company earnings, dividends, cost of borrowing, management credibility and the performance of the economy.

The technical analysis approach in stock valuation suggests that the price of a stock can be predicted using past price and volume data rather than economic factors, implying weak-form inefficiency. The technician believes that the price of a stock is strictly dependent on the interaction between the buyers and the sellers who use past price and volume information. The technical analyst assumes that investors continue to make the same mistakes they have made in the past consistent with the adage that 'history repeats itself in the stock markets'. There are many tools available for technical analysts to analyse price and volume trends, though some are more commonly used than others due to reasons of cost and ease of application.

The efficient market approach postulates that the stock market is efficient in interpreting the available information regarding a particular stock such that the price of a stock at a given time is the true price. Efficiency is categorised into weak-form, semi-strong form and strong-form based on the type of information reflected in the share price. The *weak-form* suggests that all past information is fully reflected in current prices, implying that past information has no economic value for investors. The *semi-strong* form efficiency postulates that only insiders can generate abnormal returns as publicly available information is already discounted in the share prices on announcement. The *strong-form* efficiency indicates that the current market price reflects all the pertinent information, whether publicly available or not. Even insiders are not expected to earn abnormal returns in the stock market using their privileged information. In general, the efficiency hypothesis supporters believe that the future price of a share is determined by future events.

3. COMMONLY USED TECHNICAL TOOLS

Technical analysts have an arsenal of tools to generate 'indicators' to help them analyse the performance of stocks and make investment decisions. A brief survey in the stock market indicated that there are hundreds of technical tools available. However for the purpose of this study only eight tools are selected because they provide automatic buy and sell signals based on certain quantifiable parameters that ensure maximum objectivity in the decision making process. The commonly used tools which require substantial intuitive judgement like Andrews' Pitchfork, Bollinger Bands, Trendlines were not selected. The following commonly used tools were selected for evaluation:

- (1) The Moving Average Convergence/Divergence (MACD). This indicator is calculated by subtracting a 26-day exponential moving average from a 12-day moving average. The basic trading rule is to sell when MACD falls below its 9 day trigger line and buy when MACD rises above the trigger line.
- (2) Single Moving Average Crossing Method
- (3) Two Moving Average Crossing Method
- (4) Three Moving Average Crossing Method

The moving average method calculates the average value of a security's price over a period of time. There are simple, exponential and weighted moving averages differentiated by the weight assigned to the most recent data. The trading rule is to buy when stock price rises above its moving average and sell when the price is below the moving average. This is also known as simple moving average crossing method. The two moving average crossing methods employ two moving averages, the short and long-term. A buy signal is rendered when the short-term moving average crosses above the long-term moving average and a sell signal is indicated when the short-term moving average crosses from above to below the long-term moving average. The three moving average crossing method employs the short-term, medium-term and the long-term averages. A buy signal is indicated when the short-term is higher than the medium-term and the latter is higher than the long-term moving average. Conversely, a sell signal is indicated when the short-term is below the medium-term and the latter is below the long-term moving average.

- (5) Parabolic Stop and Reversal (SAR). This indicator is used to set stop price when the stock has reversed direction. A buy signal is rendered when the closing price of the stock moves above the SAR and sell signal is indicated when the closing price of the stock moves below SAR.
- (6) Directional Movement System. It has five indicators but the more commonly used ones are the Plus Directional Indicator (+DI) and the Minus Directional Indicator (-DI). Usually a 14-day +DI and -DI are plotted one above the other. A buy signal is indicated when the +DI rises above the -DI and a sell signal when the +DI falls below the -DI. This trading rule is further substantiated by the 'extreme point value' or the price of the stock on the day the line crosses. For example, when a buy signal (+DI rises above -DI) is

indicated, the investor should wait until the stock's price rises above the extreme point (the high price on the day the +DI and -DI crossed) before buying.

- (7) **TRIX.** It displays the percent rate-of-change of a triple exponentially smoothed moving average of a stock's closing price. The TRIX indicator oscillates around a zero line. Its triple exponential smoothing is designed to filter out 'insignificant' cycles (those that are shorter than a predetermined x period). Trades are placed when the indicator changes direction, buying when the TRIX is above its trigger line (moving average line computed over a set number of days) and selling when it falls below its trigger.
- (8) **Stochastic Oscillator.** It compares a stock's closing price relative to its trading range over the last x -time periods. It ranges from 0% to 100%; a reading of 0% shows that the stock's closing price was the lowest price that the stock has been traded during the preceding x -time periods. A value of 100% shows the highest price that the stock has been traded during the preceding x -time periods.

4. VIABILITY MEASUREMENT OF SELECTED TOOLS

The viability of the selected technical tools evaluated in this study is measured based on the following criteria (Gerald Appel, 1980): it should be able to establish its profitability net of costs over a period of time, that is the net profits should be greater than the profits from the benchmark portfolio (KLSE CI); it should be sufficiently simple to use; losses resulting from the use of the tool should be sufficiently small so that even a string of losses does not seriously erode the capital base; a decision can be automatically initiated based on the clear signal indicated.

The performance of the selected tools is measured based on their application on a portfolio of eight stocks from eight different sectors. The performance of this portfolio is compared to that of the KLSE Composite Index during the same period. The analysis is performed over the bullish market that ran through the year 1993, the bearish market in the year 1994 and the long-term period from 1989 to 1994.

The evaluation of the selected tools is performed using the Metastock computer software with the following assumptions: an initial capital of RM 1,000; every buy or sell transaction involves the whole amount of equity with a 1.25% of transaction cost, inclusive of commission and stamp duty; no interest is added to the equity during 'out-of-market' situation; there are

no minimum bids and lot size restrictions; since short-selling is illegal on the cash equity market only 'long' positions are analysed; closing prices are used for all the tests and all trades are terminated by selling at the end of the test period. The average profitability generated using the tools is compared to the average profitability of the KLSE CI.

Based on the assumption mentioned above, the *System Tester* function of the *Metastock* software is used to generate the profit/loss of the selected tools and the benchmark portfolio. An example of the profit/loss calculation based on the transactions generated by MACD method on the KLSE CI is shown below:

The transaction on 26/2/93 was bought at RM638 and sold on 9/3/93 at RM631. The difference in price was RM7 (RM638-RM631). The number of shares purchased at the price of RM638 was 1.548, which was derived from (RM1000-RM12.35)/RM638. The shares were sold at RM631 for a total amount of RM976.82. Net of transaction cost of RM12.21 the sale generated a loss of RM35.39.

5. EVALUATION OF THE TOOLS

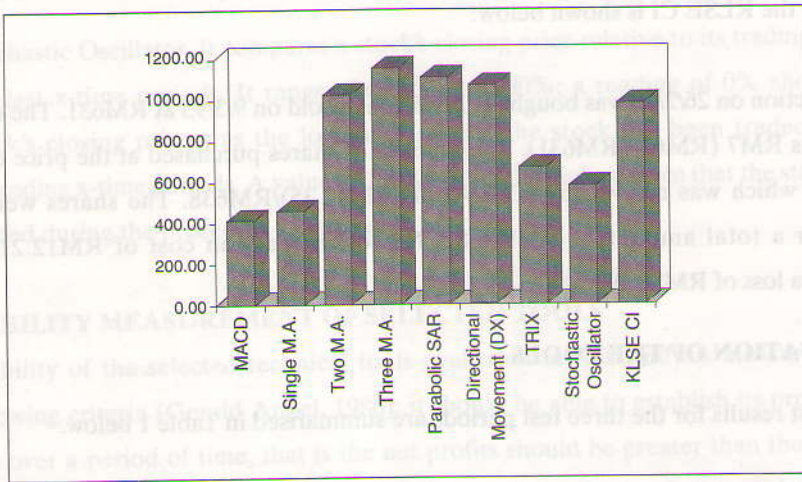
The test results for the three test periods are summarised in Table 1 below.

Table 1
Results From the Use of Technical Tools and
the KLSE Composite Index

	Tools	Test Period (values in RM)		
		1993	1994	1989-94
1	MACD	411.14	-170.72	-600.51
2	Single M. A.	455.68	-169.90	-850.84
3	Two M. A.	1015.69	82.66	728.06
4	Three M. A.	1146.38	47.52	971.50
5	Parabolic SAR	1098.39	-146.95	733.28
6	Directional Movement (DX)	1065.56	96.87	173.98
7	TRIX	659.67	323.28	2441.36
8	Stochastic Oscillator	572.50	17.32	1590.21
9	KLSE CI	968.08	-265.06	1091.61

In the bullish year 1993, although all tools generated profits only four (Two MA, Three MA, Parabolic SAR and Directional Movement (DX)) beat the profitability of the KLSE CI. The most profitable one was the Three Moving Averages with an average profitability of RM1146.38, that is 18% higher than the KLSE CI. The MACD recorded the worst performance with profits of RM411.14, that is 57% lower than the KLSE CI (refer to Chart 1).

Chart 1 - Performance of the Tools in the 1993 Bullish Market

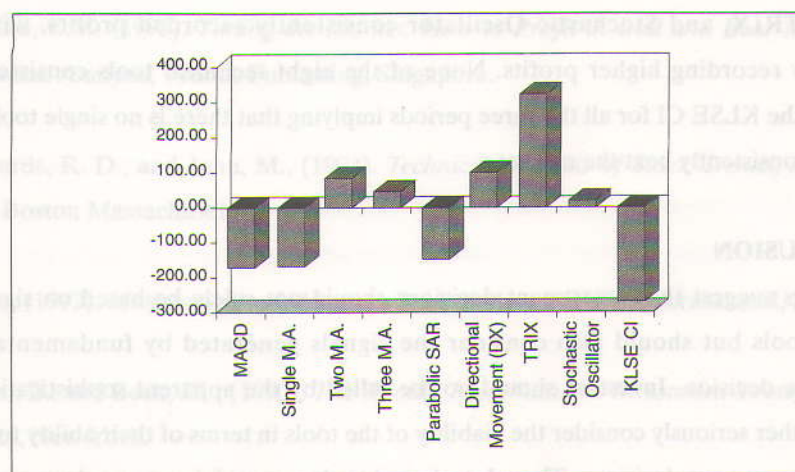


In the bearish year 1994, three tools (MACD, Single MA and Parabolic SAR) and the KLSE CI recorded losses. The MACD generated the most losses among the tools and in general all tools fared better than KLSE CI. The most profitable tool was TRIX with profits of RM 323.28 (refer to Chart 2).

1	MACD	-170.72	100.00
2	Single M.A.	-150.30	100.00
3	Two M.A.	100.00	100.00
4	Three M.A.	1146.38	100.00
5	Parabolic SAR	-146.72	100.00
6	Directional Movement (DX)	100.00	100.00
7	TRIX	323.28	100.00
8	Stochastic Oscillator	100.00	100.00
9	KLSE CI	100.00	100.00

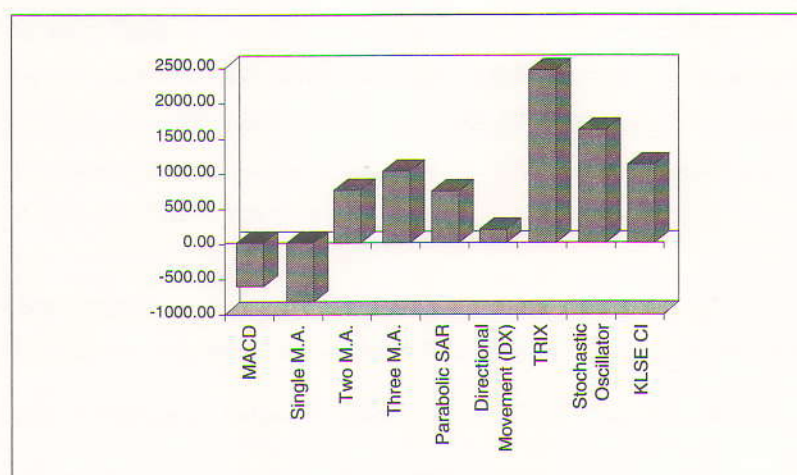
, Three MA,
the KLSE CI.
profitability of
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Chart 1).

Chart 2 - Performance of the Tools in the 1994 Bearish Market



For the long-term period of 1989-1994, only two tools (MACD and Single MA) recorded losses with the latter being the worse performer (refer to Chart 3). Among the tools that generated profits, TRIX performed the best with 120% higher profits than KLSE CI. The KLSE CI performed better than four of the profitable tools (Two MA, Three MA, Parabolic SAR and DX).

Chart 3 - Performance of the Tools during the period 1989-1994



Overall, in the bullish period all tools generated profits. In the bearish market and the long-term period, MACD and Single MA consistently recorded losses whereas Two MA, Three MA, DX, TRIX, and Stochastic Oscillator consistently recorded profits, with TRIX consistently recording higher profits. None of the eight technical tools consistently outperformed the KLSE CI for all the three periods implying that there is no single tool superior enough to consistently beat the market.

6. CONCLUSION

The findings suggest that investment decisions should not solely be based on signals from technical tools but should also consider the signals generated by fundamental factors affecting the decision. Investors should not be lulled by the apparent sophistication of the tools but rather seriously consider the viability of the tools in terms of their ability to generate profitable investment decisions. Though technical tools are useful as a supplementary device to help investors make investment decision based on concrete facts and figures, they still lack the human intelligence and psychology that can intuitively combine a large number of facts in a logical sequence that cannot be captured in the mathematical equation of the tools.



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The following is a brief summary of the guidelines.

GUIDELINES ON UNIT TRUST FUNDS

Size of Unit Trust Fund

The size of a unit trust fund shall not be more than 500 million units. Where the existing size of the fund is less than 500 million units, the praproposal of the SC is required for any subsequent increase. The initial issue price shall be at RM1.00 per unit during the launching and offer period which shall not exceed 30 days.

Permitted Investments

A unit trust fund can only invest in authorised assets, which are defined as follows:

1. Securities of companies listed on Kuala Lumpur Stock Exchange (KLSE);
2. Units of unrelated property trust funds listed on the KLSE;
3. Securities listed on a foreign stock exchange;