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Golden cross as Buying Indicator for Stock Investment in Bursa Malaysia

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Abstract

There are many factors affecting the performance in stock markets, causing difficulties for traders in ascertaining the right time for them to purchase shares. This paper analyzes the use of the Golden Cross as an indicator for buying stock, based on the stock market of Bursa Malaysia from June 2008 until January 2011. The 30 most active counters from Bursa Malaysia were analyzed. This project compared the returns of buying at golden crosses of various EMA and selling at (i) Death Cross, (ii) highest price before Death Cross and (iii) at the peak of short EMA, using three pairs of EMA, namely EMA 50 and 100, EMA 50 and 200, and EMA 100 and 200. Results show that buying at Golden Cross with high volume and selling at peak of short EMA before the formation of Death Cross is a reliable method for investors because it gives a consistent return.

Keywords: *Golden Cross, Death Cross, Exponential moving average, Bursa Malaysia*

1. INTRODUCTION

Bursa Malaysia is one of the largest bourses in Asia with just under 1,000 listed companies offering a wide range of investment choices. Previously known as Kuala Lumpur Stock Exchange (KLSE), it became a demutualised exchange and was renamed Bursa Malaysia in 2004. It consists of a Main Board, a Second Board and MESDAQ. Larger companies such as Aeon Co (M) Bhd, Petronas Gas Bhd and AirAsia Bhd are listed in the Main Board, while medium sized companies are in the Second Board. The Malaysian Exchange of Securities Dealing & Automated Quotation (MESDAQ) provides a market for high-growth and high-technology companies such as Asia Bioenergy Technologies Bhd, Cbs Technology Bhd and Gd Express Carrier Bhd. The Kuala Lumpur Composite Index (KLCI) has adopted the FTSE worldwide index standard and is now known as the FTSE Bursa Malaysia KLCI. The FTSE Bursa Malaysia KLCI has a total of 30 companies, as compared to the KLCI that comprised 100 companies. This Index is taken to be representative of our stock market's performance and provides us with a benchmark that reflects the growth of Malaysia's economy.

1.1 Factors and events that influence performance in Bursa Malaysia

Experienced investors know that the stock market can be highly unstable. But what causes the market to go up or down? There are several factors and events that can affect the stock market performance.

1.1.1 Interest rates

Interest rates play a major role in determining stock market trends. Interest rates are determined by the demand for capital, which in turn will impact liquidity and thus share prices.

1.1.2 Company profits

Company profits are very much an issue in share investment. Companies doing well in their business activities are likely to attract more investors, hence resulting in high demand of

their shares, whereas firms which are not doing well may see investors sell their shares on the market.

1.1.3 Global events
Big events such as war and changes in gas and oil prices can affect stock prices and market fluctuations. Changes in the values of foreign currencies will affect overseas markets.

1.2 Technical Terms
There are several technical terms have been used in this study.

1.2.1 Exponential Moving Average (EMA)
Since stock prices are unpredictable, there are many technical analyses including the Exponential Moving Average (EMA). EMA helps smoothening the price curve for better trend identification. Unlike the Simple Moving Average (SMA), EMA places greater importance on recent data. EMA is a common indicator used in technical analysis to show the trend of a stock or future.

1.2.2 Golden Cross
A Golden Cross occurs when the short term moving average line crosses the long term moving average line of the share price of a particular counter. When a Golden Cross occurs for a particular counter, it indicates that more traders want to buy rather than sell that stock. Technical analysts believe that Golden Cross usually indicates it is safe to buy shares as prices will continue to rise.

1.2.3 Death Cross
A Death Cross occurs when the short term moving average falls below the long term moving average and indicates that a selling trend is under way. This indicates that currently more people are selling than buying the stock. Technical analysts believe that a Death Cross is a clear warning to sell as share prices are likely to fall.

1.2.4Volume
Volume is a measure of the amount of shares traded over a day. A high volume indicates that the counter is active. A price movement with high volume is usually seen as a stronger and more relevant movement than one with low volume. High volume often acts as a confirmation of a trend.

The Bursa Malaysia market is uncertain. There are ups and downs during each trading session. Thus, the problem for investors is that they do not know when is the right time to buy, to sell or just to put their stock on hold. Traders have difficulties in ascertaining the right action to take if, say, a sharp rally occurs. Therefore, the objective of this project is to investigate the success of Golden Cross as a buying indicator coupled with several selling indicators, and how this varies with the choice of EMAs used. This will hopefully identify suitable buying and selling indicators to assist traders. About 30 counters from Bursa Malaysia will be used in our study. For comparison we use three pairs of EMAs, namely EMA-50 and EMA-100, EMA-50 and EMA-200 and EMA-100 and EMA-200.

2. LITERATURE REVIEW

Ever since its introduction by Joseph Granville in 1960, the moving average line has been used as a tool to judge the conversion of a trend. The following two patterns, using the moving average lines, are considered as "buy" or "sell" signals: When a shorter (e.g., 50-day) moving average line crosses over a longer one (e.g., 200-day), from below, while both lines are rising, it is a major buy signal called golden-cross, indicating that the market is in a

bull trend. The reverse is called a death-cross, a sell signal. Although Fama (1970) tried to deny the usefulness of these crosses using a random walk model, the golden-cross and death-cross are still supported by many experienced investors. (Miwa & Ueda, 2002).

In a study by Miwa and Ueda (2002), it was mentioned that several people tried to analyze the usefulness of golden and Death Crosses. Among them, Stephan Taylor (1990) tried to analyze it in the currency futures market by quantifying the profitability of an investment strategy, i.e., buying a fixed amount when a golden-cross appeared and selling off the same fixed amount when a death-cross appeared. Balsara et al (1996) also applied a similar investment strategy to markets such as Comex gold, treasury bonds, soybeans and Japanese Yen forex. They examined the usefulness of the crosses and of the optimal sets of dual moving lines. In Balsara's paper, the short-term moving averages range from 3 to 15 days and the long-term moving average range from 9 to 45 days. Both papers concluded that although the dual moving line system was an effective technical trading rule to some extent, no universally effective set of lines that didn't depend on specific periods or markets was found.

Vardar et al (2008) examined the impact of interest rate and exchange rate changes on composite return and volatility in different sectors in the Istanbul Stock Exchange. Although he found market volatility more responsive to changes in exchange rates, conditional volatility significantly relates to the interest rates in all indices except for service and industrial sector. As per his conclusion, changes in interest rates have an increasing impact on the volatility of technology sector and a decreasing impact on the volatility of financial and composite indices. Mark Seleznov (2010) said that the system (Golden-cross and Death-cross) is a very long term trading system and is often very late on entry and exit. It does have a fairly good track record with many indices and other assets.

An article by Jeb Handwerger (2010) states that moving averages are used by many traders to identify trends as they smoothen price action and act as key support on the way up, and resistance on the way down. They also give trading signals when they move through each other. These signals are called "moving average crossovers." In fact, it is one of the most widely used technical indicators and extremely popular among high frequency traders because it is so clear cut and easy to program. It allows the trader to ride a trend higher and to cut losses short. Nevertheless, Melvin Pasternak (2010) mentioned that to make accurate trading decisions, these moving average crossovers are most effective when combined with other technical analysis tools such as candlesticks or indicators such as MACD.

3. METHODOLOGY

3.1 Obtaining the data

The daily opening and closing prices were extracted from the historical data in http://thestar.com.my and exported into Microsoft Excel.

3.2 Plotting the graph

Based on the data collected, the EMA graphs were plotted. In order to calculate the Exponential Moving Average *(EMA)*, first the Simple Moving Average *(SMA)* was calculated. The *SMA* for n period was found by using the average of the prices from first day to nth day where the P_1 is the price on first day and P_n is the price at nth day.

$$SMA(n) = \frac{(P_n + P_{n-1} + P_{n-2} + \ldots + P_1)}{n} \quad (1)$$

The value of *SMA* was used as initial *EMA* to be substituted into the *EMA* equation:

$$EMA(n) = \alpha \cdot Pn + (1-\alpha)EMA(n-1) \tag{2}$$

The α in the *EMA* formula is the smoothing factor where:

$$\alpha = \frac{2}{(n+1)} \tag{3}$$

and the P_n is the price on day *n*.

EMA values were calculated using Microsoft Excel. Plotting the graph of Exponential Moving Average against time was done using Microsoft Excel.

To plot the *EMA* graphs, the Simple Moving Average *(SMA)* as the initial point and the Exponential Moving Average *(EMA)* are calculated using the closing prices of the 24 active counters collected.

3.3 Spotting the Golden Cross and Death Cross

The Golden Cross is considered as the buying point and spotted when the shorter Exponential Moving Average (EMA) moves above the longer term Exponential Moving Average (EMA). Conversely, the Death Cross is considered as a selling point; it happens when the shorter moving average moves below the longer moving average. The golden crosses and Death Crosses from the 24 active counters were used to study the potential of Golden Cross and Death Cross as indicators to buy and sell stocks. The closing prices at the crosses were collected and tabulated in Microsoft Excel and the average return was calculated. The arithmetic return was calculated using:

$$r = \left(\frac{V_r - V_i}{V_i} \right) \times 100\% \tag{4}$$

Where V_i is the initial investment and V_r is the final closing value and then substituted into this formula to find the average return:

$$Average\,\mathrm{Return} = \frac{1}{n}\sum_{i=1}^{n} r_i = \frac{1}{n}(r_1 + r_2 + ... + r_n) \tag{5}$$

The remaining buying point of Golden Cross with high volume and selling points of highest price before Death Cross and peak of shorter EMA from the relevant counters were spotted and the average return of each method was calculated.

4. RESULTS AND DISCUSSION

4.1 Method 1: Buying at Golden Cross and selling at Death Cross

Table 1 shows the percentage of positive return and negative return for Golden Cross and Death Cross using *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. It can be seen from the table that more cases of negative return occur than those with positive return when buying at Golden Cross (GC) and selling at Death Cross (DC).

Table 1: Percentage of positive return and negative return for Golden Cross and Death Cross

EMA	Total crosses	% of cases with	
		Positive return	Negative return
50 & 100	47	44.68	55.32
50 & 200	28	35.71	64.29
100 & 200	23	30.43	69.57

Table 2 shows the percentage of average return with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. The average return is not consistent between the 3 pairs of *EMA* and is not very conclusive. In particular, *EMA* 50 and 200 has negative return. Therefore, it can be concluded that the average return was poor. METHOD 1 is not suitable as our empirical data shows. This is because the narrowing of the band between the two *EMA*s acts as a signal for investors to start selling, and by the time the Death Cross appears it is already too late for selling as share prices have already started falling.

Table 2: Percentage of average return for Golden Cross and Death Cross

EMA	Total crosses	Average return (%)
50 & 100	47	11.68
50 & 200	28	-4.89
100 & 200	23	0.06

4.2 Method 2: Buying at Golden Cross and selling at highest price

Table 3 shows the percentage of positive return and negative return for Golden Cross and highest price with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. It can be seen from the table that the cases of positive return are much more prevalent than negative return when buying at Golden Cross (GC) and selling at the highest price.

Table 3: Percentage of positive return and negative return for Golden Cross and highest price

EMA	Total crosses	% of crosses with	
		Positive return	Negative return
50 & 100	47	93.62	6.38
50 & 200	28	89.29	10.71
100 & 200	23	95.65	4.35

Table 4 shows the percentage of average return for Golden cross and highest price with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. Highest price were used as a selling point. The average return is much higher than that achieved when the Death Cross was used as the selling point. Therefore, it can be said that selling at highest price is better than having Death Cross as a selling indicator. Furthermore, the occurrence of negative return is much smaller. Therefore, investors can gain more profit if they sell at highest point rather than sell at Death Cross which when the price already went down. Golden Cross is a good buying point but investors cannot depend on Death Cross as a selling point. It can be conclude that METHOD 2 is better than METHOD 1 because it can be seen from our

empirical data the average return is more consistent and it gives much higher positive return. However, this method requires historical data and cannot be used by traders as selling indicators, since comparison across time is required to determine the 'highest price'.

Table 4: Percentage of average return for Golden Cross and highest price

EMA	Total crosses	Average return (%)
50 & 100	47	45.3071
50 & 200	28	40.0936
100 & 200	23	36.4840

4.3 Method 3: Buying at Golden Cross and selling at peak of Short EMA

Table 5 shows the percentage of positive return and negative return for Golden Cross and Short *EMA* (at peak) with *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. It can be seen from the table that there are more cases of positive return than negative return when buying at Golden Cross (GC) and selling at the peak of the Short *EMA* only for two pairs of *EMA*.

Table 5: Percentage of positive return and negative return for Golden Cross and Short EMA (at peak)

EMA	Total crosses	% of crosses with	
		Positive return	Negative return
50 & 100	45	71.11	28.89
50 & 200	27	55.56	44.44
100 & 200	23	39.13	60.87

Table 6 shows the percentage of average return with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. Short *EMA* were used as a selling point. Short *EMA* (at peak) were used as a selling point. It can be said that predicting at short *EMA* is worst than predicting at highest price because the price percentage is lower when the short *EMA* was used as a selling indicator at selling point. It can be seen from our empirical data the average return is not consistent even it gives higher positive return. Hence, Golden Cross is a good buying point but investors cannot depend on short *EMA* (at peak) as a selling point. It can be concluded that highest price was still the best indicator compared to Death Cross and short *EMA*.

Table **6:** Percentage of average return for Golden Cross and Short *EMA* (at peak)

EMA	Total crosses	Average return (%)
50 & 100	45	21.8036
50 & 200	27	18.5401
100 & 200	23	7.0115

4.4 Method 4: Buying at Golden Cross with high volume and selling at the highest price

Table 7 shows the percentage of positive return and negative return for Golden Cross with High Volume and highest price with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. It can be seen from the table that more cases percentage of positive return is definitely higher than percentage of negative when buying at Golden Cross (GC) and selling at highest price.

Table 7: Percentage of positive return and negative return for Golden Cross with high volume and at highest price

EMA	Total crosses	% of crosses with	
		Positive return	Negative return
50 & 100	20	95.00	5.00
50 & 200	12	91.67	8.33
100 & 200	4	100.00	0.00

Table 8 shows the percentage of average return with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. Highest price was used as a selling point. It can be seen from our empirical data the average return is more consistent and gives higher positive return. In particular, for *EMA* 100 and 200 the positive return was 100% and for other *EMA* it almost reached 100% too. Therefore, investors can gain more profit if they buy at Golden Cross with High Volume and sell at highest point. METHOD 4 is definitely better than METHOD 2 because it gives higher positive return. However, even though Method 4 gives the highest average return compared to other indicators, it still requires historical data and cannot be used as selling indicators by traders because it requires time in order to determine the 'highest price'.

Table 8: Percentage of average return for Golden Cross (near) high volume and at highest price

EMA	Total crosses	Average return (%)
50 & 100	20	63.2388
50 & 200	12	57.7920
100 & 200	4	44.9285

4.5 Method 5: Buying at Golden Cross with high volume and selling at Short EMA (at peak)

Table 9 shows the percentage of positive return and negative return for Golden Cross with High Volume and Short *EMA* (at peak) with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. It can be seen from the table that there are more cases of positive return than negative return when buying at Golden Cross (GC) and selling at peak of short *EMA*.

Table 9: Percentage of positive return and negative return for Golden Cross (near) high volume and Short EMA (at peak)

EMA	Total crosses	% of crosses with	
		Positive return	Negative return
50 & 100	20	68.18	31.82
50 & 200	12	75.00	25.00
100 & 200	4	100.00	0.00

Table 10 shows the percentage of average return with prices at *EMA* 50 and 100, *EMA* 50 and 200, *EMA* 100 and 200. Short *EMA* (at peak) were used as a selling point. It can be seen from our empirical data the average return is high and consistent, and positive return is achieved for most cases. In particular, for *EMA* 100 and 200, positive return was achieved for all cases. Therefore, investors can gain more profit if they buy at Golden Cross with High Volume and sell at short *EMA* (at peak). By using Short *EMA* (at peak) as a selling indicator it will be easier to determine the price at which investors should sell and it does not require historical data.

Table 10: Percentage of average return for Golden Cross (near) High Volume and Short *EMA* (at peak)

EMA	Total crosses	Average return (%)
50 & 100	20	29.8028
50 & 200	12	23.4455
100 & 200	4	25.6117

5. CONCLUSION AND RECOMMENDATIONS

In this project, the occurrence of the Golden Cross and Death Cross of 30 counters in Bursa Malaysia had been identified for the duration from January 2008 until January 2011. There were five methods that being used as an indicator for buying and selling stocks. From the result, it showed that the best method was buying at Golden Cross with high volume and selling at the peak of short *EMA*. In general, the average return for this method showed consistency for *EMA* 50 and 100, 50 and 200, 100 and 200. From Table 9, it showed that occurrence of positive return is much higher than negative return, as *EMA* 50 and 100 attained 68.18%, *EMA* 50 and 200 showed 75% and lastly *EMA* 100 and 200 showed 100%. This shows that the probability for investors to gain profit is high.

Golden Cross is a good buying point but Death Cross is not a good selling point because as the band between the two *EMA*s narrows it signals to investors to start selling, and by the time the Death Cross appears it is already too late. In fact, method 1 was the worst method because the average return was very low, with negative average return for *EMA* 50 and 100. Our results show that buying at Golden Cross with High Volume and selling at the peak of the Short *EMA* is the most reliable indicators for investors. As a recommendation, future researchers should include more counters in order get more crosses to determine the accuracy of this method. Furthermore, future researchers may also add more data, such as 10 years back, to prove the reliability of this method as an indicator. Lastly, future researchers also can develop simple software to detect the indicators of Golden Cross with High Volume and peak of short *EMA* so that investors will easily know when the best time for them to sell their stock is.

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