

## CHAPTER SIX

### CONCLUSIONS

This research began with a desire to contribute to the knowledge about the weak-form efficiency of Stock Index Futures market. This study is designed in such a way that trading rules test on trading profitability to be a measurement to test market efficiency using some forecasting techniques. If using the forecasted data and trading rules could not consistently “beat the market” or could not produce above average returns, the findings then suggest that the market is weak form efficient. Therefore, to ascertain the weak form efficiency of the Malaysian Stock Index Futures, several approaches, namely time series and econometric model forecasting techniques were used to test the weak form market efficiency.

. For the investigation on the market efficiency purposes, two forecasting methods were applied. First technique uses the time-series forecasting methods namely moving averages and exponential smoothing methods to forecast futures index. Then the second technique manipulates the log linear distributive lag model and log linear distributive lag dummy model for sample and ex-post forecast period. The constructed models and techniques are then examined on the forecast data (t+1) with trading mechanism, rules and assumptions and test whether each significantly outperforms the market.

The data was collected from the period January 1996 to December 2000 extracted mainly from the following sources: Bank Negara Malaysia (BNM) published monthly statistical bulletin, Statistics Department of Malaysia, various local daily newspaper, in particular The New Straits Times and The Star, The KLSE monthly Investor Digest and Malaysia Derivatives Exchange (MDEX) respectively

In this research, several important discoveries have been made: For the relationship analysis; first, it was found that only the market capitalization has positive and direct relationship with the stock index futures. The rest of the indicators namely stock index futures volume, M1 and saving deposits showed the inverse relationship with the stock index futures in the relationship analysis. Secondly, the findings also suggest that stock index futures had insignificant change before and after the crisis when we adopt the dummy approach. The analysis using dummy approach suggests the same sign of coefficients of the dependent variables but the change decrease only 0.00626%, which is insignificant.

For the efficiency analysis; overall, the market conforms well to the predictions of weak form efficiency. This implies that investors, in general, cannot consistently beat the market by using past market information. Both moving averages and single exponential smoothing tests of market efficiency shows negative returns and tend to state that the market is in its weak-form efficient level. The test also found poor predictive qualities of past price data and successive price changes to be independent, suggesting that players would be unlikely to make use of history of past price to earn above average returns.

It is noted for sample forecasting on the log linear distributive lag model and log linear distributive lag dummy model, the investigation into the trading profitability show returns to be significantly positive. However, for this ex-ante forecast, the method used above, is statistically bias and tends to exaggerate the accuracy of the model. Forecast errors tend to be reduced as the values of the dependent variables are already used in the regression estimates.

For the ex-post forecast, the result shows remarkable positive returns for each month. However, when we compared with the buy-and-hold policy and strategy ( buy and hold policy is simply buying stocks or index at the beginning of the test period and holding it till the end of the test period), it was asserted that the trading rules did not, on average earn significantly more than buy-and-hold policy. The evidence may suggest that by using the buy-and-hold policy; from observation 30-60 (buy the index at 455.9 for observation 30 and sell the index at 681.4 for observation 60), the result on the returns is higher than the results generated by the system. For the buy-and-hold policy, the profits recorded RM 22,430.00 ( $\{681.4-455.9\} * 100 - 120$ ) compared to the profits of RM 7170.00 from the log linear distributive lag model. For the log linear distributive lag dummy model, the positive returns generated by the model seemed to be much more higher than buy-and-hold policy. However, investigation through each observation found something interesting evidences, which support that the system did not offer any advantages in “beating the market”.

The system seemed to out weight the profits on observation number 39 for log linear distributive lag dummy model even though the different of the actual data and forecast data is only 1.5 points. For more consistent and persistent criteria, which may affect the results, the outliers’ observation such as number 39 should be taken into serious consideration. If we subtract the profit made in observation number 39, then the profit may decrease to amount of RM 18, 940.00 after taken commissions into account. This amount is actually lower than the amount of profits generated by the buy-and-hold policy above. Alexander (1961) also stated that given a market that is efficient, the best investment strategy is the buy-and-hold policy.

Again the last point which doubt that such trading rules could outperform the market is through again the consistence and persistent criteria. The winning trades and losing trades in the system did not show any significant consistency in the system. Both winning and losing trades recorded 15 times each and these did not give strong evidences to suggest the system could offer advantage to “beat the market”.

Both techniques and the results of the testing are consistent with weak form efficiency thus came to a strong conclusion that the Malaysian Stock Index Futures market is an efficient market.

The implicit finding in these studies however indicates much more important discoveries on the futures market in Malaysia itself. Stock index futures market in Malaysia is believed in its weak-form efficient. Even though the market itself still in the infant stage where retail investors and speculators are not taken much weight on their decisions using fundamental and technical factors, most of the big market makers and big players are those who use futures as a tools of hedging and exercising arbitraging activities. For the hedgers, they use futures to lock in a price and obtain protection against rising or declining prices. Arbitrageurs are those people who attempt to profit from temporary distortions or inconsistencies in prices. Investors began to learn the workings of the market especially in the 1997-1998 bear market, which shows that investors now tend to believe and appreciate the purpose of hedging using stock index futures. Therefore, market is believed to be efficient as most of the big players put more weight especially on technical analysis and fundamental analysis to hedging and arbitraging. People would also see imperfection on market prices occur only temporarily as the existence of arbitrageurs in the market may set back the prices at the equilibrium.

Finally, the most important implicit finding regarding the market efficiency is on the size of the market itself. It is true that our stock index futures market is pretty small compared to other derivatives exchanges. However, intuitive explanations on this issue hover around the players in the market. As most of our big market makers are foreigners who generate volume, our futures market has a niche from its liquidity factor. Annuar and Shamser (1993) suggest that in a developing security market, the efficiency of the market will be dependent upon certain conditions, the most important, is the liquidity as proxied by the volume of trading. Thus, speculators also play an important role in generating liquidity in our local derivatives market. The active participations from big players and speculators offer better trading volume and also liquidity in the market.

The market could be categorized as an efficient market if the market has some characteristics. The characteristics of an efficient market include the availability of investment data; markets are frictionless, a relatively large number of investors and fund managers; active trading volumes; well disseminated business and financial news; market participants are price-takers, a reasonable degree of market regulation, a rather sophisticated communication system and all individuals are utility maximizers. These characteristics which most of the characteristics are similar to our local futures market especially in its operational efficiency. Operational efficiency deals with the cost of transferring funds. EMH as operationalised by Fama (1970) implies asset prices, which are allocationally efficient and in somewhat limited sense, operationally efficient.

Securities market can be operationally efficient if transaction costs are low and are set at a reasonable minimum level. Moreover, Malaysia has developed its derivatives exchange in such a way that meets the above criteria. With merger of KLOFFE and

COMMEX, Malaysia introduced single exchange namely Malaysian Derivatives Exchange (MDEX) to monitor and supervise the derivatives market, have its own clearing house namely Malaysian Derivatives Clearing House (MDCH), using automated trading system such as KATS for trading and exercising low cost of trading and brokerages which suggest that Malaysian Stock Index Futures market is weak form efficient.

### Limitations of the Study

Limitations are foreseeable in conducted research for any studies. Same like other studies; time and resources constraint are the common factors due to the time period given in completing this research. Accessibility and availability of monthly data on several important economics indicators data limit the options in selecting the indicators data. The impediments in choosing the appropriate and accurate forecasting models also contribute to the limitation factors. Some other limitations of the study hover around the data itself and confine to some parametric statistical test only.

### Suggestions for Further Research

As in all such projects there is room for additional research activity. The following are some suggestions for additional work:

1. Additional investigations on the relationship analysis of other economics indicators would be more useful and would make more clear what is the impact of such indicators on stock index futures.
2. Extension of the data in the future which will explain more accurate relationship as limitation on data due to infant futures market which only started on December 1995, may hit upon more interesting findings in the future.
3. Finally, it would be useful to develop more on other forecasting tools, technique and measurement in investigating the weak form market efficiency and not confined to econometrics, moving averages and single exponential smoothing method in the future.