CONSTRUCTION OF STOCK INDICES IN MALAYSIA

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1. INTRODUCTION

The prices of shares traded in a stock market tend to fluctuate during a trading day in accordance with the general mood of the market and with certain specific factors affecting individual stocks. We can easily measure the performance of an individual stock in any trading day by calculating the percentage change in price at the end of the trading day over the closing price at the end of the previous day. However, to measure the performance of the whole stock market is a more complex task necessitating the construction of a stock market index (Crowe, 1965; Allen, 1975). Such an index, in fact, serves several other purposes. When we discuss investments, it is necessary to talk about movements in "the market" and compare such movements with other variables such as industrial production, changes in the money supply, corporate profits, etc. Rates of return on the stock index itself can be a valuable bench mark for judging the performance of actual portfolios of shares. Modern portfolio theory requires knowledge of the relationship of prices of individual stocks to movements in the market in order to allocate funds rationally among stocks. It has also proved to be of considerable use to analysts in forecasting the price movement in the future. Furthermore, the index is regarded as a fairly good barometer of business conditions in the country since the stock market is especially sensitive to changes in business activity and expectation. Finally, a stock market index may be used for stock index futures trading.

2. CONSTRUCTION OF A STOCK INDEX

In this section, we consider the construction of a stock market index. There are three important issues involved. They are the following :

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1. Selecting stocks for inclusion
2. Determining the relative importance of weight of each included stock.
3. Combining or averaging included stocks.

Thus, the three issues are those of sampling, weighting, and averaging (Lorie and Hamilton, 1972; Fabozzi and Jankus, 1984).

2.1 SAMPLING

A stock index can be constructed based on all the stocks listed in a stock exchange or on only a sample of stocks. Movements in The Kuala Lumpur Stock Exchange (KLSE) could be represented by movements of all the stocks listed or just, say, 100 stocks. When indices were first constructed, the limitation of the data processing technology made it impractical to include more than a few stocks. For example, when the Dow-Jones Industrial Average was first published in 1884, there were only 11 component stocks. However, with the advent of advanced computer technology, it is relatively easy to include all stocks or a large number of stocks in the computation of an index.

The New York Stock Exchange Index, the American Stock Exchange Index and the Stock Exchange of Singapore (SES) All-Share Index are three examples of a stock index based on all stocks listed on the respective exchanges (Saw and Tan, 1983). While movements in these indices reflect the overall sentiment of the respective exchanges, one main disadvantage of an index based on all stocks is that some listed stocks may be inactive for a long period of time and when they are traded, the changes in their prices are attributed to their sentiment on that particular trading day rather than the cumulative effect over all the trading days for which these stocks were not traded.

There are many stock indices based on only a sample of stocks. These include the Dow-Jones Industrial Average and the Standard & Poor's '500'(S&P '500') Index (based on 500 stocks) for the New York Stock Exchange, the Financial Time (FT) 100 Index for the London Stock Exchange, the Nikkei-Dow Jones Average (based on 225 stocks) for the Tokyo Stock Exchange, the Hang Seng Index (based on 33 stocks) for the Hong Kong Stock Exchange, the Australian All-Ordinaries (based on 242 stocks) for the Australian Stock Exchange and The Kuala Lumpur Stock Exchange Composite Index (KLSE CI) for The KLSE which is currently based on 85

stocks. Other stock indices include the Straits Times Index, the O.C.B.C. Index and the S.E.S. Index for the Stock Exchange of Singapore (see Tang (1975) and Saw (1978)). Table 1 gives the list of some stock indices based on all listed stocks and some stock indices based on a sample of stocks.

The usefulness of these and other indices based on samples of stocks is dependent on the degree of confidence to which we can infer movements in excluded stocks on the basis of movements in included stocks. The above indices generally satisfy this criterion of confidence.

TABLE 1.

Stock Indices Based On All Listed Stocks And On A Sample Of Stocks

(a) Stock Indices based on All Listed Stocks
- (i) New York Stock Exchange Composite Index
- (ii) American Stock Exchange Index
- (iii) Stock Exchange of Singapore All-Share Index
- (iv) KLSE Emas Index

(b) Stock Indices based on a Sample of Stocks

Index	No. of Stocks
(i) Dow-Jones Industrial Average	30
(ii) Standard & Poor's '500' Index	500
(iii) Financial Times 100 Index	100
(iv) Nikkei - Dow Jones Average	225
(v) Hang Seng Index	33
(vi Australian All-Ordinaries	242
(vii) KLSE Composite Index	85
(viii) KLSE Industrial Index	30

The adequacy of indices based on samples of stocks is dependent on two factors: stocks of relatively few companies constitute a large proportion of the value of the stocks of all listed companies; and the tendency of all stocks to move together.

The substantial concentration of value in relatively few companies generally contributes to the power of small samples. Of course, if each company is considered to be equally important, this concentration is of no help. However, if large companies are considered more important

than small companies, so that one is interested in changes in the market value of all stocks, then the concentration of value is very helpful. For example, the 85 component stocks of the KLSE CI constitutes about 66 per cent of the value of all stocks listed on the KLSE Main Board as at 31.12.92.

Studies have shown that about half of the variation in the prices of individual stocks was accounted for by movements in the market (King, 1966). Obviously, if all stocks moved together in perfect lock step, a single stock would suffice to represent the market. Although the degree of co-movement of share prices of different stocks is not high, it is still sufficient to help make relatively small samples valuable as indicators of general market movements.

2.2. WEIGHTING

The stocks to be included in an index must be combined in some way in order to determine the value of the index. Therefore, each time the index is computed it is necessary to determine the relative importance or weightage of each included stock. There are several ways in which weights can be assigned. The three most common weighting systems are: (1) weighting by the market value of the stock (2) weighting by the price of the stock, and (3) weighting each stock equally regardless of its price or market value. The actual weighting system used is dependent on the objective of the index. If the index is constructed to measure the performance of a portfolio of stocks in which the investment in a stock is proportional to the market value of that stock, then the first system of market value weighting should be used. However, if an index is to be used for measuring the performance of a portfolio in which the investment in a stock is proportional to the price of that stock, then the second system of price weighting should be preferred. On the other hand, if an index is used for measuring the performance of a portfolio in which equal amount of money is invested in each stock, then the third system of equal weighting should be employed.

The general expression for computing the value of an index may be obtained. Suppose there are n component stocks in an index and their prices in the base period are P_{b1}, P_{b2}, ..., P_{bn}. Let their corresponding prices in the current period be P_{c1}, P_{c2}, ..., P_{cn}. Then their returns are R_1, R_2, ..., R_n where, for the ith component stock, $R_i = (P_{ci} - P_{bi})/P_{bi}$. With an index of 100 for the base period, the value of the index in the current period may be expressed in terms of the returns as

$$I_c = 100 \times (1 + \sum_{i=1}^{n} W_i R_i / \sum_{i=1}^{n} W_i)$$

where the weights W_1, W_2, ..., W_n for the returns of the component stocks are dependent on the weighting system used. Suppose the numbers of shares of the component stocks are Q_{b1}, Q_{b2}, ..., Q_{bn} in the base period. For the market value weighting system, the weights are the market values of the component stocks in the base period given by $P_{b1}\ Q_{b1}$, $P_{b2}\ Q_{b2}$, ..., $P_{bn}\ Q_{bn}$ so that the index I_c reduces to

$$I_c = 100 \times (\sum_{i=1}^{n} P_{ic}\ Q_{ib} / \sum_{i=1}^{n} P_{ib}\ Q_{ib})$$

which is the ratio of the total market value of the component stocks in the current period to the total market value of these stocks in the base period expressed in percent. In the case of the price weighting system, the weights are the prices of the component stocks in the base period with the resultant index I_c reducing to

$$I_c = 100 \times (\sum_{i=1}^{n} P_{ic} / \sum_{i=1}^{n} P_{ib})$$

which is therefore the ratio of the sum of the prices of the component stocks in the current period to the sum of the prices of these stocks in the base period expressed in percent. For the equal weighting system, the weights are all ones and therefore the change in the index from the base period is merely the arithmetic mean of the returns. The example in Table 2 illustrates the computation of an index with three component stocks based on the three weighting systems.

In Table 2, the numbers of shares of component stocks A, B and C are 80, 40 and 10, respectively. Suppose their prices increased from \$10, \$5 and \$7 respectively, in the base period to \$10.50, \$5.50 and \$8.00, respectively, in the current period. With an index of 100 in the base period, the value of the market value-weighted index in the current period is 106.54 obtained from 100 x (1 + 70/1070) in Table 2. Similarly, the value of the price-weighted index in the current period is 109.09, that is, 100 x (1 + 2/22). Finally, the value of the equally weighted index in the current period is 109.76, that is, 100 x (1 + 0.2929/3). These three indices have different values for the current period because of the different weighting systems used.

TABLE 2

MARKET VALUE WEIGHTING, PRICE WEIGHTING AND EQUAL WEIGHTING

Component Stock (1)	No of Shares (2)	Price Per Share			Weighting System			Return Weighted By		
		Base Period (3)	Current Period (4)	Return (5) = (4)-(3) / (3)	Market Value (6) = (2)x(3)	Price (7) = (3)	Equal Amount (8)	Market Value (9) = (6)x(5)	Price (10) = (7)x(5)	Equal Amount (11) = (8)x(5)
A	80	$10	$10.50	0.05	$ 800	$10	$1	40	0.5	0.05
B	40	$ 5	$ 5.50	0.10	$ 200	$ 5	$1	20	0.5	0.10
C	10	$ 7	$ 8.00	0.1429	$ 70	$ 7	$1	10	1.0	0.1429
Total					$1070	$22	$3	70	2.0	0.2929

We have seen in the above example that an index based on weighting by market value attaches relatively greater importance to large companies. The stocks of these companies may behave differently from the stocks of small companies. While the stock prices of small companies tend to be more volatile, the stock prices of large companies tend to move with the general economic cycles in the economy as a whole. Further, an index weighted in this manner possesses the property of the automatic adjustment of a stock for stock split or bonus issue. As long as there is no change in aggregate market value, the relative importance of such stock remains the same and the index is, therefore, not affected.

The index based on price weighting is biased when it is adjusted for stock split or bonus issue. This is illustrated in Table 3. The price of stock A increases from $20 in period 1 to $50 in period 2 while the prices of stocks B and C remain unchanged throughout the 4 periods. The average, therefore, increases from 12 to 22. There is a stock split of $1 to 50 cents or a bonus issue of 1 for 1 between periods 2 and 3. Assuming no change in the sentiment of stock A, its price should be $25 in period 3 and the average should still be 22. Therefore, the divisor is now reduced from 3 to 1.8636, that is (25 + 10 +6)/22. Suppose, subsequently, the price of stock A declines to $10 in period 4. This is equivalent to the price of $20 in period 1. Therefore, the average in period 4 should be 12. However, with a divisor of 1.8636 used from period 3 onwards, the average in period 4 is calculated to be (10 + 10 +6)/1.8636 = 13.95.

TABLE 3.

BIAS OF PRICE WEIGHTING METHOD

Component Stock	1	2	3	4
		Stock split $1 to 50 cents		
A	20	50	25	10
B	10	10	10	10
C	6	6	6	6
Average	12	22	22	13.95
Divisor	3	3	1.8636	1.8636

There are many stock indices that are based on weighting by market value. These include most of the leading stock indices such as the S & P's Index, the F.T. 100 Index, the Nikkei Index, the Hang Seng Index, the Australian All-Ordinaries and the KLSE CI. Stock indices based on price weighting include the Dow-Jones Industrial Average and the New Straits Times (NST) Industrial Index. An example of an index based on equal weighting is the Indicator Digest with component stocks listed on the New York Stock Exchange. Although the Dow-Jones Index is based on price weighting, the selection of its component stocks produces almost the same results as an index based on weighting by market value. Its component stocks are those of very large companies. As a consequence, movements in the Dow-Jones are almost the same as the movements of an index based on weighting by market value.

2.3 METHODS OF AVERAGING

Given the prices of component stocks, either equally weighted or weighted by shareholding, it is necessary to combine them into a single number which will serve as a value of a descriptive measure. While most Statistics books list and discuss several types of averages or measures of central tendency, only two of these averages are used in constructing most of the stock market indices (Mendenhall et al., 1989). They are the arithmetic mean and the geometric mean. The leading stock indices that are based on the arithmetic mean of prices include the S & P's Index, the Dow-Jones Index, the Nikkei Index, the Hang Seng Index, the Australian All-Ordinaries, the SES All-Share Index and the KLSE CI. The only widely used index based on the geometric mean is the Value Line Index.

Before we illustrate the two methods of averaging by means of an example, it is important to note that indices are not quite the same as averages. The difference lies in the fact that the index is constructed by setting the value of the average equal to, say, 100 at some point or period in time in order to facilitate comparisons of the value of the index at some subsequent (or previous) points in time. For example, in Table 2, the value of the index for the base period is set to 100 regardless of the system of weighting used.

The computation of a stock index based on the arithmetic mean is, in fact, already illustrated in Table 2. The difference in the two methods of averaging is illustrated in an example in Table 4 of three component stocks whose prices rise for the first two successive periods and then decline for the next two successive periods. Price weighting of component stocks is used. The arithmetic

TABLE 4.

INDICES BASED ON ARITHMETIC MEAN AND GEOMETRIC MEAN OF STOCK PRICES

		Price Per Share Period			
Component Stock	Base	1	2	3	4
A	$1	$1.30	$1.50	$0.70	$0.40
B	$1	$1.50	$2.10	$1.10	$0.20
C	$1	$2.00	$2.50	$0.90	$0.70
Average:					
Arithmetic	$1	$1.60	$2.03	$0.90	$0.43
Geometric	$1	$1.57	$1.99	$0.88	$0.38
Index:					
Arithmetic	100	160	203	90	43
Geometric	100	157	199	88	38

mean is the sum of the individual prices of the component stocks divided by the number of component stocks while the geometric mean is the nth root of the product of the prices of the component stocks.

Table 4 shows that if there is any variation over time in the prices used for computing the index, there will be a difference between the value of the arithmetic mean and the geometric mean computed from these prices. The index based on the arithmetic mean will increase more rapidly and decrease more slowly than the geometric mean. The degree of divergence increases with the degree of variability in the prices of the component stocks. For example, the Standard & Poor's Industrial Index was about 17 in June, 1950. In July 1966, it reached a value of 90. Cootner (1966) showed that, if the geometric mean had been used, the index would only have been about 60.

3. KUALA LUMPUR STOCK EXCHANGE COMPOSITE INDEX.

Prior to 1986, the major stock indices of the KLSE were the KLSE Industrial Index, the NST Industrial Index and the OCBC Composite Index. Since the construction of these stock

indices, the Malaysian economy and the KLSE listed companies have experienced rapid growth and changes in terms of their business activities and economic performance. By 1986, the impact of these changes was not reflected in these stock indices. Therefore, in order to overcome the limitations of these stock indices, the KLSE CI was constructed in 1986 with the following objectives (Kuala Lumpur Stock Exchange, 1986):

(a) it should effectively reflect the performance of the companies listed on the stock exchange;

(b) it should be generally sensitive to the investors' expectation;

(c) it should be generally indicative of the impact of government policy changes, and

(d) it should be reasonably responsive to the underlying structural changes in the different sectors of the economy.

3.1 CRITERIA FOR SELECTING THE KLSE CI COMPONENT STOCKS

The KLSE CI is based on a sample of stocks listed on the KLSE. The selection of the component stocks is based on six criteria which are consistent with the broad objectives of constructing the KLSE CI. These criteria are :

(i) Companies listed on the KLSE, regardless of domicile, will be considered for inclusion into the list of component stocks if their major business activities contribute substantially to the Malaysian economy. Thus, Singapore companies listed on the KLSE which have no or insignificant business activity in Malaysia should be excluded from consideration. This criterion would, therefore, ensure that movements of the KLSE CI reflect changes in the Malaysian economy. This criterion no longer applies since Singapore companies were delisted from The KLSE on 1.1.90.

(ii) Inactive companies, that is, companies whose shares are not traded for more than three consecutive months, whether for reasons of suspension or inactivity, will not be considered unless suitable alternative companies for maintaining adequate sector representation are not available.

(iii) Companies whose trading volumes are less than 250 lots (1 lot = 1,000 shares) per calendar year will not be considered unless suitable alternative companies for maintaining adequate sector representation are not available. This criterion of 250 lots has been changed to 1000 lots in 1992.

Criteria (ii) and (iii) are formulated to avoid a major weakness of the other stock indices which is the distortion caused by changes in the index due to inactivity of certain component stocks.

(iv) Companies which experienced substantial and complex changes in their capital structure during the base year of 1977 were not considered in the first round of selection but were eligible for consideration in subsequent years. This criterion is established to minimise the impact of distortion from complex and substantial capital changes on the index in its base year.

(v) Newly-listed companies will only be considered for inclusion after a minimum trading period of 3 months in order to eliminate the distortion of the index through price volatility. This criterion is established to allow the prices of these companies to stabilise.

(vi) Subsidiary companies, that is, companies which are majority owned by any KLSE CI component company are not considered. This criterion is established to minimise or avoid double counting or distortion of the weights used in constructing the index. However, associate companies may be considered.

3.2 THE SELECTION PROCESS

While the criteria provide broad guidelines for the selection of the KLSE CI component stocks, there are practical difficulties involved which cannot be completely resolved.

First, the reporting requirements for public-listed companies are not detailed enough to allow for analysis of earnings by sectoral classification. This is particularly true of conglomerates or holding companies which have diverse interest and therefore their actual core business cannot be easily determined.

Second, there are new business activities which are not clearly defined within the broad classifications adopted by the KLSE.

In the selection of any company as a component stock in preference to another, other relevant parameters such as market capitalisation, market activity, earnings and the company's business activities are also considered.

Consistent with the broad objectives of constructing the KLSE CI and within the criteria formulated above for the selection of component stocks and the practical difficulties involved, a sample of 67 component stocks was selected for the base year 1977. This list was gradually increased to the current figure of 85 component stocks by a Sub-Committee of the KLSE called the Index Sub-Committee (formerly called the KLSE CI Task Force) which is entrusted with the task of regularly reviewing the list of component stocks and ensuring that the KLSE CI continues to satisfy the broad objectives of this index. The current list of 85 component stocks of the KLSE CI is given in Appendix I. This list is not a static list as the component stocks are regularly reviewed by the Index Sub-Committee.

3.3 REPRESENTATIVENESS OF THE KLSE CI

An important objective of the KLSE CI is that the composition of the component stocks must reflect the sectoral developments of the economy.

This means that the index must not be unduly biased by the component stocks over-representing or under-representing certain sectors. To ensure that this problem of bias does not arise, the number of component stocks selected for different economic activities is also correlated with the sectoral contribution to Gross Domestic Product. This correlation is constantly monitored.

3.4 CHOICE OF BASE YEAR AND COMPUTATION OF INDEX

An examination of the movements of the other three indices of the KLSE and the general economic trends of the country suggests that it is reasonable to adopt the whole of the year 1977 as the base period. However, to eliminate extreme price fluctuations of certain active stocks due to cyclical variations or manipulative market activities, the arithmetic or truncated mean of the interquartile range, that is, the central 50 percent of daily closing prices in 1977 of each component stock is adopted as the price, P_o , of that component stock in the base period. The

existing number of shares of that component stock on 1st January 1977 is assumed to be the number of shares outstanding, Q_o , in the base period.

The KLSE CI is constructed by using the market value of each component stock as weight and the arithmetic mean as the method of averaging. Thus, the sum over all component stocks of the truncated mean of the daily closing prices, P_o , of a component stock in 1977 multiplied by the number of shares outstanding, Q_o , on 1st January 1977 is used as the Opening base or Base aggregate market value (Base AMV).

That is,

Base AMV = $\Sigma P_o Q_o$

The index on the first trading day of 1977, 3rd January 1977, is given by

$$\text{Index} = \frac{\text{Aggregate Market Value of Component Stocks on 3.1.1977}}{\text{Base AMV}}$$

$$= \frac{\Sigma P_1 Q_1}{\Sigma P_o Q_o}$$

where $\Sigma P_1 Q_1$ = Current AMV

$\Sigma P_o Q_o$ = Base AMV

3.5 ADJUSTMENTS

A stock index is different from other kinds of index numbers in that the base aggregate market value used in the computation of the index must be adjusted in order to make allowances for capital changes such as rights issues and also for inclusion or exclusion of component stocks. For instance, if a stock is included in the list of component stocks for the index, the base aggregate market value must be increased so that the current aggregate market value which now includes this component stock will not distort the level of the index. The method used to compute the KLSE CI allows for such adjustments to be done.

Briefly, the formulae for adjusting the aggregate market value (AMV) for rights issues, inclusion and exclusion of a component stock may be stated as follows:

(ii) Rights Issue

Adjusted Base AMV

$$= \text{Old Base AMV} \times \frac{\text{Old Current AMV + Mkt Value of Rights Issue}}{\text{Old Current AMV}}$$

(iii) Inclusion of a Component Stock

Adjusted Base AMV

$$= \text{Old Base AMV} \times \frac{\text{Old Current AMV + Mkt Value of Inc. Comp. Stk.}}{\text{Old Current AMV}}$$

(iv) Exclusion of a Component Stock

Adjusted Based AMV

$$= \text{Old Base AMV} \times \frac{\text{Old Current AMV - Mkt. Val. of Exc. Comp. Stk}}{\text{Old Current AMV}}$$

The old current AMV is the aggregate market value of all component stocks based on the closing prices on the last day of cum-rights or on the last day before the inclusion or exclusion of a component stock. Similarly, the market value for rights, the market value of included component stock and the market value of excluded component stock are calculated on the same basis.

It should be noted that such adjustment is not necessary for bonus issues or stock splits as there is no change in the aggregate market value.

Since the KLSE CI was computed from 3rd January 1977 onwards, there were numerous occasions when adjustments were made for rights issues, inclusion and exclusion of component stocks. Thus, the KLSE CI is constantly updated to take into account such changes. The index is also extended backward to the first trading day of 1974. The monthly closing levels of the KLSE CI for the period 1977 - 1991 are given in Table 5. These values are also plotted in a line chart in Chart 1.

4. KUALA LUMPUR STOCK EXCHANGE EMAS INDEX

The KLSE Emas Index was launched in October 1991. This index is based on all stocks listed on the Main Board of the KLSE. The whole year of 1984 was adopted as the base period as it was a relatively stable year (Kuala Lumpur Stock Exchange, 1991).

The method of construction of the KLSE Emas Index is similar to that of the KLSE CI. The market value of each Main Board stock is used as weight. The arithmetic mean is used as the method of averaging. Thus, the sum over all Main Board stocks of the arithmetic mean of the central 50 percent of the daily closing prices, P_o, of a Main Board stock in 1984 multiplied by the number of shares outstanding, Q_o, on 1st January 1984 is used as the Opening base or Base aggregate market value (Base AMV). That is,

Base AMV = $\Sigma P_o Q_o$

The index on the first trading day of 1984, 3rd January 1984, is given by

$$\text{Emas Index} = \frac{\text{Aggregate Market Value of All Main Board Stocks on 3.1.1984}}{\text{Base AMV}}$$

$$= \frac{\Sigma P_1 Q_1}{\Sigma P_o Q_o}$$

Where $\Sigma P_1 Q_1$ = Current AMV

$\Sigma P_o Q_o$ = Base AMV

There are practical problems encountered in the computation of the KLSE Emas Index that are not experienced in the computation of the KLSE CI. While the component stocks of the KLSE CI are reasonably active, there are many Main Board stocks which are inactive because of suspension or no trading. For any stock that was suspended or had no trading during the whole of 1984, the last done price of that stock before 1984, which could have been transacted long before 1984, was used as the price P_o of that stock in the computation of the Opening base or Base AMV. Similarly, any stock that has not been traded for some time is assumed to have the same price for the period of inactivity as the last transacted price.

The adjustment procedures for capital changes such as rights issues, inclusion and exclusion of Main Board stocks arising from delistings and new listings are similar to those for the KLSE CI.

The monthly closing levels of the KLSE Emas Index for the period 1984 - 1991 are given in Table 6. These values are plotted in a line chart in Chart 2. For purposes of comparison, the corresponding values of the KLSE CI are also plotted in Chart 2. Notice that the two indices moved in tandem.

5. CONCLUDING REMARKS

In this paper, we discussed the various issues involved in the construction of a stock index and examined the construction of the KLSE CI and the KLSE Emas Index. An understanding of how stock indices are constructed and what they represent is important not only for investment fund managers who often have to gauge the performance of their portfolios of shares against the market index but also for the successful trading of stock index futures by hedgers and speculators. In fact, in his textbook on investment management, Reilly (1979) begins the chapter on stock market indices with the following statement: "A fair statement regarding stock market indicator series is that everybody talks about them, but few people know how they are constructed and what they represent." This observation is certainly valid in Malaysia.

TABLE 5.

MONTHLY CLOSING LEVELS OF THE KLSE CI, 1977 - 1991

MONTH	1977	1978	1979	1980	1981	1982	1983
JAN	91.37	115.31	168.94	230.72	403.07	362.71	308.94
FEB	90.66	115.15	160.61	248.44	450.30	320.25	340.17
MAR	90.86	127.75	172.76	230.26	451.89	306.20	354.02
APR	89.55	135.26	182.70	244.43	500.16	322.32	388.18
MAY	91.23	144.35	189.42	266.79	493.11	314.80	390.27
JUNE	97.49	159.27	180.10	277.86	540.34	288.58	412.74
JULY	104.72	165.87	181.75	298.14	432.90	258.39	393.35
AUG	110.52	184.49	191.42	315.81	325.77	247.45	410.27
SEPT	107.12	160.30	200.91	300.08	321.20	266.56	396.92
OCT	108.76	176.35	191.00	355.17	312.72	279.94	381.04
NOV	110.87	149.59	195.13	368.85	372.08	285.88	368.37
DEC	113.39	156.22	205.59	366.70	380.82	291.45	401.60

TABLE 5 (CONTINUATION)

MONTHLY CLOSING LEVELS OF THE KLSE CI, 1977 - 1991

MONTH	1984	1985	1986	1987	1988	1989	1990	1991
JAN	423.81	309.40	208.70	278.38	282.85	390.52	570.21	497.26
FEB	405.26	310.30	196.58	326.81	271.72	391.31	603.18	562.40
MAR	391.91	305.89	190.33	317.20	286.12	409.71	583.60	587.05
APR	396.13	292.77	171.72	359.38	312.49	441.25	520.57	588.72
MAY	376.02	298.24	190.17	403.15	325.20	448.56	583.87	629.54
JUNE	347.99	279.78	218.02	410.00	364.97	445.55	584.65	618.69
JULY	352.39	284.50	208.65	448.71	367.00	462.10	630.29	602.32
AUG	346.76	269.10	234.24	430.34	331.42	462.74	540.85	553.46
SEPT	336.89	297.28	221.02	415.37	338.77	496.15	459.08	522.69
OCT	312.12	290.57	269.49	270.49	346.01	475.20	491.71	531.40
NOV	303.91	257.04	247.47	243.24	348.21	509.52	464.71	532.09
DEC	303.56	233.48	252.43	261.19	357.38	562.28	505.92	556.22

TABLE 6.

MONTHLY CLOSING LEVELS OF THE KLSE EMAS INDEX, 1984 - 1991

MONTH	1984	1985	1986	1987	1988	1989	1990	1991
JAN	122.35	91.71	65.81	82.25	83.02	107.63	152.01	129.80
FEB	118.05	92.45	61.80	93.74	80.85	108.05	162.62	147.30
MAR	113.10	91.36	59.75	92.72	83.72	114.79	158.42	153.15
APR	114.80	87.43	55.43	101.21	87.23	121.62	159.42	153.17
MAY	109.09	88.25	60.14	111.91	89.44	124.14	156.52	161.69
JUNE	101.67	83.26	68.64	115.44	100.85	124.65	155.63	158.57
JULY	103.02	83.35	67.04	126.93	102.20	129.77	167.62	153.25
AUG	100.52	80.30	74.25	123.97	93.54	129.45	141.97	140.95
SEPT	98.15	88.33	70.34	119.78	93.95	134.04	122.62	133.91
OCT	92.23	86.68	82.22	82.82	95.97	127.28	127.76	136.00
NOV	89.05	78.71	75.19	75.08	95.48	135.42	123.05	135.79
DEC	89.48	70.43	75.70	77.57	98.90	147.10	131.05	140.53

CHART 1, KLSE CI, 1977-1991

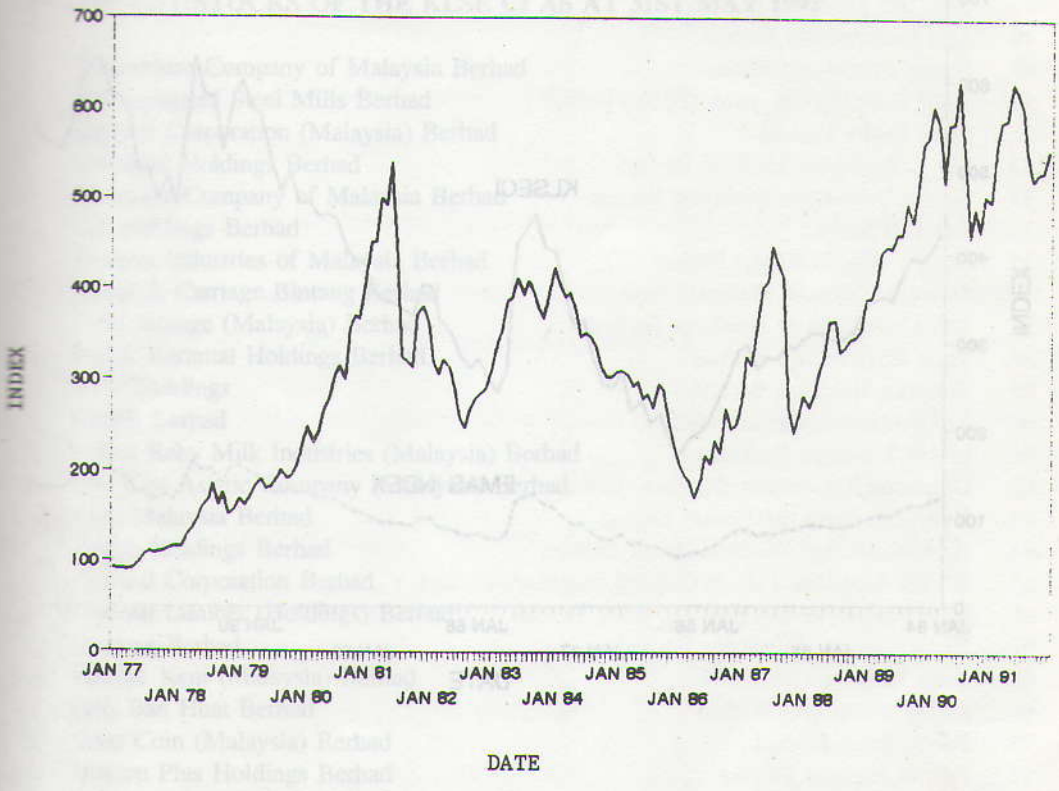
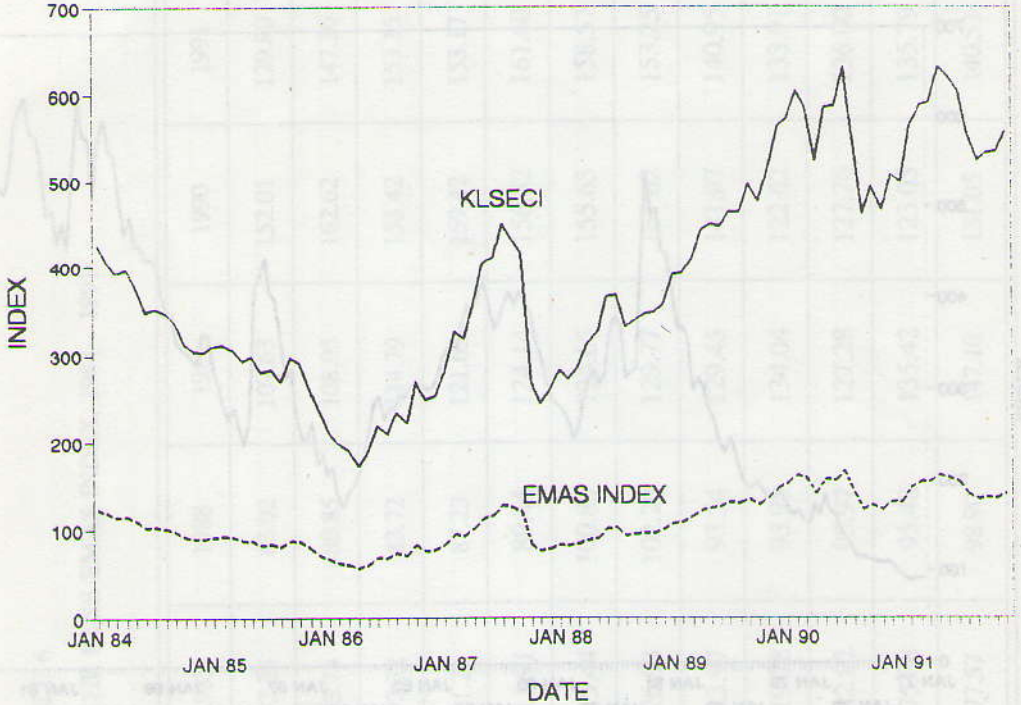


CHART 2. KLSE CI & EMAS INDEX
1984-1991



APPENDIX I

COMPONENT STOCKS OF THE KLSE CI AS AT 31ST MAY 1992

1. Aluminium Company of Malaysia Berhad
2. Amalgamated Steel Mills Berhad
3. Berjaya Corporation (Malaysia) Berhad
4. Boustead Holdings Berhad
5. Chemical Company of Malaysia Berhad
6. C I Holdings Berhad
7. Cement Industries of Malaysia Berhad
8. Cycle & Carriage Bintang Berhad
9. Cold Storage (Malaysia) Berhad
10. Datuk Keramat Holdings Berhad
11. DNP Holdings
12. DMIB Berhad
13. Dutch Baby Milk Industries (Malaysia) Berhad
14. The East Asiatic Company (Malaysia) Berhad
15. Esso Malaysia Berhad
16. Ganda Holdings Berhad
17. General Corporation Berhad
18. General Lumber (Holdings) Berhad
19. Genting Berhad
20. George Kent (Malaysia) Berhad
21. Goh Ban Huat Berhad
22. Gold Coin (Malaysia) Berhad
23. Golden Plus Holdings Berhad
24. Guinness Anchor Berhad
25. Hexza Corporation Berhad
26. Hong Leong Industries Berhad
27. Hume Industries (Malaysia) Berhad
28. Insas Berhad
29. Kian Joo Can Factory Berhad
30. Kumpulan Emas Berhad
31. Lion Corporation Berhad
32. Magnum Corporation Berhad
33. Malayan Cement Berhad
34. Malayan United Industries Berhad
35. Malaysian Airline System Berhad
36. Malaysian International Shipping Corporation Berhad
37. Malaysian Oxygen Berhad
38. Multi-Purpose Holdings Berhad
39. Nestle (Malaysia) Berhad
40. The New Straits Times Press (Malaysia) Berhad
41. Oriental Holdings Berhad
42. OYL Industries Berhad
43. Palmco Holdings Berhad
44. Perlis Plantations Berhad

45. Pilecon Engineering Berhad
46. Rothmans of Pall Mall (Malaysia) Berhad
47. Samanda Holdings Berhad
48. Seal Incorporated Berhad
49. Setron (Malaysia) Berhad
50. Shell Refining Company (FOM) Berhad
51. Sime Darby Berhad
52. Sin Heng Chan (Malaya) Berhad
53. Sistem Televisyen Malaysia Berhad
54. Sitt Tatt Berhad
55. Sungei Way Holdings Berhad
56. Syarikat Telekom Malaysia Berhad
57. Tan Chong Motor Holdings Berhad
58. Time Engineering Berhad
59. Timuran Holdings Berhad
60. Tradewinds (Malaysia) Berhad
61. UMW Holdings Berhad
62. Uniphone Telecommunications Berhad
63. Yeo Hiap Seng (Malaysia) Berhad
64. Arab-Malaysian Merchant Bank Berhad
65. British-American Life & General Insurance Berhad
66. Development & Commercial Bank Berhad
67. Kuala Lumpur Industries Berhad
68. MBF Holdings Berhad
69. Malayan Banking Berhad
70. Public Bank Berhad
71. Rashid Hussain Berhad
72. Faber Group Berhad
73. Bandar Raya Developments Berhad
74. IGB Corporation Berhad
75. Island & Peninsular Berhad
76. Selangor Properties Berhad
77. Berjuntai Tin Dredging Berhad
78. Malaysia Mining Corporation Berhad
79. Rahman Hydraulic Tin Berhad
80. Selangor Dredging Berhad
81. Golden Hope Plantations Berhad
82. Kulim (Malaysia) Berhad
83. TDM Berhad
84. Highlands & Lowlands Berhad
85. Kuala Lumpur Kepong Berhad

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