# CHAPTER 1

# INTRODUCTION AND BACKGROUND INFORMATION

## 1.1 Introduction

The issue of interdependence in equity markets has attracted significant attention in the international stock markets. This is especially true in the wake of the October 1987 crash, which caused stock price movements to be correlated across international stock markets. Numerous studies investigated the linkages between the developed stock markets and some newly emerging stock markets. Previous studies by Taylor and Tonks (1989), Chaudhuri (1997) and Masih and Masih (1997) found evidence of interdependence among international markets. In a stock exchange, stocks are often categorized into different sectors according to the economic activities of the listed companies. Interdependence between the different sectors of a stock exchange has been investigated but to a lesser extent compared to interdependence between different stock markets.

In the local scene, Kok and Goh (1997) examined the short-run dynamic relationship among the sectors in the Kuala Lumpur Stock Exchange (KLSE). More discussion of the previous studies is given in Chapter 2. The Securities Commission reported in its 1998 Annual Report that all sectors of the KLSE experienced significant contraction as access to liquidity and credit became increasingly scarce. A relevant question would be that how the performance of a

sector will influence another sector? This research paper attempts to answer this question for the sectors in the KLSE.

## 1.2 Objectives

In this study, the interdependence among the share prices of five major indices of the KLSE, namely, Industrial, Finance, Plantation, Mining and Property Index is investigated. The inclusion of these sectors in this research paper is discussed in Chapter 4. Their relationships in the short and long run are examined.

In studying the sectoral interdependence, the lead-lag relationship among the sectors is examined to identify the leading sector in the Malaysian stock market. The interdependence of sectoral performance is studied to check whether it is unidirectional or multidirectional. This is conducted for both the short and long run. Any sector, which predominantly leads the others, is the initial receptor of exogenous shocks to the equilibrium relationship in the stock market.

Some preliminary attempts are made to distinguish the performance of the KLSE for different sub-periods of the sample chosen for this study. The results are used to study if different market performance plays a role in determining the pattern of interdependence among the five sectors. The forecasting ability of the sectoral relationships that is found in this study is used to examine their practical usefulness.

## 1.3 The Kuala Lumpur Stock Exchange (KLSE)

The name "Kuala Lumpur Stock Exchange" (KLSE) was used since 1994. However, the history of the stock exchange started as far back as in 1930 but there was no public trading of shares then. The first public trading began in 1960 when the Malayan Stock Exchange was formed. When Singapore formed an independent country, the stock exchange was known as the Stock Exchange of Malaysia and Singapore. In 1973, due to the termination of a single currency arrangement between Malaysia and Singapore, two separate stock exchanges were formed, namely, the Kuala Lumpur Stock Exchange Berhad (KLSEB) and the Stock Exchange of Singapore (SES). However, a strong link still existed as the Malaysian and Singapore incorporated companies were allowed to be traded in both the exchanges. The year 1990 was the new mark in the history of the KLSE which saw the delisting of Singapore incorporated companies from the KLSE. The same move was done to the Malaysian companies listed in the SES.

The KLSE is a self-regulatory organization. It enforces certain guidelines for company listing requirements and also standards to be maintained by public listed companies. It has been able to keep up with the changes in time and as an emerging stock market, a lot of changes have been implemented. With the full implementation of the System on Computerised Order Routing and Execution (SCORE) in 1992, all the stockbroking companies through out the country are equipped with the KLSE's enhanced broker front-end system (WinSCORE). As an integrated terminal providing real-time market information, trading of stocks has become more convenient and efficient. The system enables online monitoring of the dealers and to keep track of broking companies' risk exposure.

The implementation of the Central Depository System (CDS) in 1993 is another breakthrough to the investors in the KLSE. The CDS is a computerized book entry system for the process of clearing and settlement. It is a scripless transaction method that has taken over the old pattern of transaction, which involved the holding and moving of physical scrips. To implement and operate the CDS, Malaysian Central Depository Sdn. Bhd. was set up in 1990. It is a 55 percent-owned subsidiary of the KLSE.

In March 1993, the Securities Commission was formed to oversee the operations of the KLSE in order to protect investors from manipulative activities by speculators and the management of companies. In 1994, share application forms for new public issues were made available in the newspaper. This has increased the accessibility of new shares to the public. In 1995, trading in smaller lots of 200 units was introduced to attract the smaller investors to invest in higher price securities. On 15 December 1995, Kuala Lumpur Options and Financial Futures Exchange (KLOFFE) began its trading on stock index futures, which is based on the KLSE Composite Index.

In order to achieve a higher investment research standard in Malaysia and at the same time, educate investors through various courses and seminars, the Research Institute of Investment Analysts Malaysia (RIIAM) was established in 1997. A subsidiary of the KLSE, Securities Clearing Automated Network Services Sdn. Bhd. (SCANS) acts as the central clearing house. Other than that, it provides the related services in information technology regarding the trading system. Malaysian Exchange of Securities Dealing and Automated Quotation

(MESDAQ), a stock exchange specialising in growth and technology companies, was launched on 6 October 1997. SCANS was appointed as the clearing house and held another additional role as the network and facilities manager for MESDAQ.

In September 1993, for the first time, companies were grouped into different sectors to reflect their main business activities. Among the major sectors are Finance, Industrial Products, Properties, Consumer Products, Trading/Services and Plantations. All the shares are listed on the Main and Second Board of the KLSE. The Main Board is generally a listing of companies with sound financial background of at least a paid-up capital of RM20 million. It was later revised to a minimum of RM50 million as of 1 April 1997. The firms listed on the Second Board are smaller in terms of paid-up capital with a minimum of RM10 million but less than RM50 million.

Tables 1.1 and 1.2 show some of the selected indicators for the KLSE. Table 1.1 presents the turnover of firms listed on the two boards over the period 1990-1998.

Table 1.1: Turnover for the Main and Second Board of KLSE, 1990-1998

| Year | Main Board | | Second Board | |
|---|---|---|---|---|
| | Turnover (million units) | Turnover (RM million) | Turnover (million units) | Turnover (RM million) |
| 1990 | 13,061 | 29,303 | 77 | 218 |
| 1991 | 12,068 | 29,249 | 280 | 848 |
| 1992 | 18,559 | 49,187 | 706 | 2,282 |
| 1993 | 105,011 | 372,634 | 2,745 | 14,642 |
| 1994 | 58,747 | 318,251 | 1,398 | 9,806 |
| 1995 | 30,862 | 157,908 | 3,078 | 20,877 |
| 1996 | 47,351 | 278,138 | 19,039 | 185,061 |
| 1997 | 62,278 | 299,596 | 10,497 | 108,958 |
| 1998 | 52,061 | 100,610 | 6,226 | 14,571 |

Source: http://www1.bnm.gov.my (Bank Negara Malaysia's website)

For the Main Board, in terms of volume, the turnover has increased by almost 300 percent from 1990 to 1998. At the same time, in terms of value, it has also increased by about 243 percent. One of the reasons for these increases is due to the increase in the numbers of listed companies in the KLSE. In 1993, its turnover was the highest with 105,011 million units traded, and valued at RM372, 634 million. The market was very bullish in that year and this attracted a lot of funds flowing into the KLSE. As for the Second Board, in the early years of the 1990's, the turnover was relatively small as only a small number of firms were listed on it. This is because it was new then, as it was just incorporated in 1988. Over the years, it has shown a remarkable increase in turnover with more firms listed.

Table 1.2: Number of Firms Listed in the KLSE and Market Capitalisation, 1990 - 1998

| Year | Number of Listed Companies | Market Capitalisation (RM billion) |
|---|---|---|
| 1990 | 285 | 131.66 |
| 1991 | 324 | 161.39 |
| 1992 | 369 | 245.82 |
| 1993 | 413 | 619.64 |
| 1994 | 478 | 508.85 |
| 1995 | 529 | 565.63 |
| 1996 | 621 | 806.77 |
| 1997 | 708 | 375.80 |
| 1998 | 736 | 374.52 |

Source: http://www1.bnm.gov.my (Bank Negara Malaysia's website)

Table 1.2 shows the number of listed companies and market capitalisation over the 1990-1998 period. There were 285 companies listed in the KLSE in 1990. Throughout the years to 1998, the number of listed companies has increased by about 2.6 times or 158 percent. Over the period of 1990-1998, market capitalisation has increased by about 2.85 times or 184 percent. The growth of

market capitalisation is slightly more than the growth of the number of listed companies. This is because the companies listed later generally have larger capitals.

However, the highest market capitalisation was in 1996 with a value of RM806.77 billion. It dropped drastically in 1997 to RM375.80 billion. The financial crisis, which hit Malaysia in 1997, affected the prices of many firms listed in the KLSE. The market was at its slump and this has caused the sharp decline in the market capitalisation.

Table 1.3: Market Capitalisation By Sector in the Main Board of the KLSE (as at 30 September 1999)

| Sector | Number of Listed Companies | Market Capitalisation (RMmil) |
|---|---|---|
| Trading Services | 77 | 150,773.4 |
| Industrial Products | 96 | 57,340.3 |
| Finance | 56 | 88,629.8 |
| Properties | 68 | 25,443.0 |
| Consumer Products | 53 | 36,652.7 |
| Plantations | 37 | 22,211.4 |
| Constructions | 30 | 27,285.3 |
| Minings | 7 | 2,067.2 |
| Hotels | 6 | 1,762.9 |
| Infrastructure | 5 | 11,725.4 |
| Trusts | 4 | 368.0 |
| TOTAL | 439 | 424,259.4 |

Source: The Star, 5 October 1999

Table 1.3 presents the market capitalisation by sector in the Main Board of the KLSE, which was calculated based on their closing prices on 30 September 1999. A total of 439 KLSE counters of all the sectors was covered after excluding 21 suspended stocks. Ttrading/services has the largest market capitalisation with a total value of RM150,773.4 million. This is from a total of 77 companies. Industrial products sector has the highest number of listed

companies but its market capitalisation was the third highest. Market capitalisation for Finance was the second highest. For the Properties, Plantations and Constructions, their market capitalisations were moderate in the range of RM20,000 to RM30,000 millions. Some other sectors, which have small market capitalisation, are Minings, Hotels and Trusts. The small market capitalisation could be due to the small number of listed companies in these sectors.

A lot of factors could have contributed to the growth of the KLSE. These include the new implementations which leads to a more sophisticated and modern system in the KLSE, increase in the knowledge and interest of the public towards the stock market, growth in the economy and also the establishment of more firms which were subsequently listed on the KLSE.

## 1.4 The Malaysian Stock Market Indices

Stock indices give an indication of the general price levels in the stock market for a period of time. The performance of the whole market on a particular day is reflected through changes in the indices. A good market index should include representative companies to reflect changes in the stock market. Prior to 1986, among the commonly used indices were the KLSE Industrial Index, the New Straits Times Industrial Index and the OCBC Composite Index. Presently, the most widely used market barometer is the KLSE Composite Index. It is computed based on information of 100 companies listed on the Main Board, which includes companies with large, medium and small paid-up capitals. The sample selected for computation of the Composite Index is constantly reviewed by a sub-committee of the KLSE, which is known as the KLSE Index Sub-Committee.

Table 1.4: Sectoral Composition of the KLSE Composite Index

| Sector | Number | Percent |
|---|---|---|
| Trading / Services | 25 | 25 |
| Industrial Products | 19 | 19 |
| Finance | 14 | 14 |
| Properties | 13 | 13 |
| Consumer Products | 12 | 12 |
| Plantations | 6 | 6 |
| Constructions | 6 | 6 |
| Minings | 2 | 2 |
| Hotels | 2 | 2 |
| Infrastructure | 1 | 1 |
| TOTAL | 100 | 100 |

Source: Nanyang Siang Pau, 30 June 1999

Currently, Trading/Services has the highest number of representative firms in the Composite Index. Table 1.3 shows that 25 percent of the companies included are from this sector. This is followed by Industrial Products with 19 companies. Finance, Properties and Consumer Products constitute moderate portions with 14 percent, 13 percent and 12 percent, respectively. The number of companies chosen from the other sectors is quite small. The selection of the companies is actually based on certain criteria. Among the criteria is that the shares of the companies must be actively traded, whereby it must not have a record of non-trading for more than 3 consecutive months. Also, subsidiary companies to any Composite Index component companies will not be selected to avoid the bias of double counting. Any newly listed companies will only be considered for inclusion after trading for at least 3 months so as to allow their prices to stabilize.

The Composite Index (CI) is measured using the following formula, which is weighted by market capitalisation

$$CI_t = \left( \frac{AMV_t}{AMV_0} \right) x100$$

where

$AMV_t = \sum_i P_{it} Q_{it}$ = Current aggregate weighted market value,

$AMV_0 = \sum_i P_{i0} Q_{i0}$ = Base aggregate weighted market value.

$P_i$ is the price and $Q_i$ is the number of listed shares.

The base period is 1977. The calculation of $P_{i0}$ is based on the truncated mean of the daily closing prices in the interquartile range in 1977. Truncated mean is used to avoid extreme price fluctuations of certain active stocks (Chapter 2, Kok and Goh, 1994). $Q_{i0}$ is the number of shares outstanding on 1 January 1977.

To revise for the inclusion and exclusion of firms from the index, there will be some adjustments to the index. For example, an exclusion of stock will reduce both the current and base aggregate market value. Similarly, changes due to the rights issue will need adjustment (Chapter 2, Kok and Goh, 1994). The revisions are as follows:

(a) Rights Issue

$$Adjusted\ Base\ AMV = Old Base AMV\ x \frac{Old\ Current\ AMV + Market\ Value\ of\ Rights\ Issue}{Old\ Current AMV}$$

(b) Inclusion of a Component Stock

$$Adjusted\ Base\ AMV = Old\ Base\ AMV \times \frac{Old\ Current\ AMV + Market\ Value\ of\ Included\ Component\ Stock}{Old\ Current\ AMV}$$

(c) Exclusion of a Component Stock

$$Adjusted\ Base\ AMV = Old\ Base\ AMV \times \frac{Old\ Current\ AMV - Market\ Value\ of\ Excluded\ Component\ Stock}{Old\ Current\ AMV}$$

As for bonus issues and stock splits, no adjustment is needed, as the aggregate market value remains the same.

The KLSE Emas Index, is another market barometer. It uses the same method of construction as the Composite Index except that it includes all the stocks listed on the Main Board of KLSE. One of the weaknesses with the inclusion of all stocks is that there could be stocks, which are inactive due to suspension or no trading. This could distort its function as a good market indicator. As for all the sectoral indices of the KLSE, they are computed similarly using all the stocks in the sector with the base year 1970 (Chapter 3, Mohamed Ariff, Shamsher and Annuar, 1998).

## 1.5 Organization of the Study

This research paper consists of 7 chapters. The first chapter introduces the theme of the study, provides some background information on KLSE and discusses the method of construction of index. The second chapter focuses on the literature review, surveying work done by the foreign and local researchers. The framework of methodology is given in Chapter 3. This is followed by a description of the data used in this study in Chapter 4. Chapter 5 discusses the

behaviour of the data over the whole sample period. The results of the long-term analysis are reported in this chapter. Chapter 6 analyses the short-run dynamics and presents the results for sub-period analysis. The conclusion and recommendations for further research is given in Chapter 7.