UNIVERSITI PUTRA MALAYSIA

**IMPACT OF CHANGES IN MACROECONOMIC
FACTORS OF STOCK PRICE PERFORMANCE:
A COMPARATIVE ANALYSIS OF PRE CRISIS
AND CRISIS PERIODS**

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by

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IMPACT OF CHANGES IN MACROECONOMIC FACTORS ON STOCK PRICE PERFORMANCE: A COMPARATIVE ANALYSIS OF PRE CRISIS AND CRISIS PERIODS

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2001

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It is generally believed that changes in economy affect the stock market performance. It is also believed that changes in stock market in turn will influence the economy as stock market serves as a leading economic indicator. Many researchers such as Kwon and Bacon (1997), Chen, Roll and Ross (1986), Ariff and Johnson (1990) and many more have investigated this relationship. However, the findings have been somewhat inconclusive, and thus, there is a need for such study in Malaysia.

The main objective of the study is to investigate whether the changes in Malaysian macroeconomic factors namely expected inflation, exchange rates, interest rates, industrial production, money supply and market return can explain its stock price variability both prior to the crisis and during the crisis periods. The study investigated which of these six macroeconomic factors significantly influence stock returns. The study also examined the nature of the relationship between the above macroeconomic variables and stock returns (negatively related, positively related, etc). To examine those relationships, monthly data were used. The analyses were

divided into two sub-periods, which are January 1987 to December 1999 and January 1987 to December 1996.

The study adopted the Arbitrage Pricing Theory and the Error Correction Model to observe the relationship between stock returns and macroeconomic variables (expected inflation, exchange rates, interest rates, industrial production, money supply and market return). The findings for sub-period January 1987 to December 1999 appear to suggest that Composite Index (a proxy for market return), money supply, interest rates and exchange rates were dominant factors in determining portfolio returns. Whereas market performance appeared to be the only common factor that significantly influenced the sectoral indices movement. Similar approaches were also employed for pre-crisis period, January 1987 to December 1996. The findings confirmed that interest rates, money supply and market return have significant effect on changes in portfolio returns. While market returns were found to be the only common factor that significantly influenced the sectoral indices. However, no significant relationship was observed between changes in exchange rates and stock returns. Other variables namely industrial production and expected inflation asserted weak influence on asset pricing during both sub-periods.

Market performance, money supply and exchange rates apparently had a positive relationship with portfolio returns and sectoral indices return. In contrast, interest rates and portfolio returns as well as sectoral indices return were found to be negatively related. In conclusion, the study found that Malaysian stock market is highly influenced by the changes in Kuala Lumpur Composite Index (a proxy for market returns), money supply, interest rates and exchange rates.

KESAN PERUBAHAN PADA PEMBOLEHUBAH MAKROEKONOMI KEATAS PASARAN SAHAM DI MALAYSIA: ANALISA PERBANDINGAN ANTARA SEBELUM KRISIS DAN SEMASA KRISIS

OLEH

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Pada amnya, perubahan pada ekonomi dipercayai akan mempengaruhi prestasi pasaran saham. Ianya juga dipercayai bahawa prestasi pasaran saham akan mempengaruhi turun naiknya ekonomi. Pertalian antara keadaan ekonomi dan pasaran saham telah pun dikaji oleh ramai penyelidik seperti Kwon dan Bacon (1997), Chen, Roll dan Ross (1986), Ariff dan Johnson (1990) dan ramai lagi. Kebanyakan mereka merumuskan bahawa ianya akan memberi faedah kepada para pengurus dana sekiranya mereka mengkaji keadaan ekonomi terlebih dahulu ketika meguruskan portfolio-portfolio pelanggan masing –masing.

Berdasarkan kepada beberapa penemuan dari negara-negara luar, adalah penting untuk menjalankan kajian yang serupa di Malaysia. Tujuan kajian ini dibuat adalah untuk menguji samada perubahan pada pembolehubah makroekonomi di Malaysia, seperti kadar anggaran inflasi, kadar faedah, kadar tukaran wang asing, kadar pengeluaran, agregat kewangan dan pulangan pasaran boleh menjelaskan ketidaktentuan harga-harga saham. Kajian ini juga bertujuan untuk meyelidik dan

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mengenal pasti pembolehubah makroekonomi (seperti di atas) yang mempengaruhi pulangan saham. Kajian ini juga akan meneliti pertalian diantara pembolehubah makroekonomi dan pulangan saham. Untuk mengkaji pertalian tersebut, data bulanan telah digunakan dan analisis akan dibahagikan kepada dua bahagian iaitu Januari 1987 hingga Desember 1999 dan Januari 1987 hingga Desember 1996.

Kajian ini menggunakan kaedah Arbitrage Pricing Theory (APT) dan Error Correction Model (ECM) untuk mengkaji pertalian antara pembolehubah makroekonomi dan pulangan saham. Kedua-dua kaedah merumuskan bahawa Indek Komposit (mewakili pulangan pasaran), aggregat kewangan, kadar faedah dan kadar tukaran wang asing merupakan faktor penting yang mempengaruhi pulangan portfolio dalam tempoh Januari 1987 hingga Desember 1999. Pada tempoh masa kedua, Januari 1987 hingga Desember 1996, kedua-dua kaedah menunjukkan bahawa kadar faedah, agregat kewangan, dan pulangan pasaran mempunyai kesan ke atas turun naiknya harga saham. Pulangan sektor indeks pula didapati hanya dipengaruhi oleh Komposit indeks. Kadar tukaran wang asing didapati tidak mempunyai pengaruh ke atas harga saham pada tempoh masa tersebut. Lain-lain pembolehubah seperti kadar pengeluaran dan anggaran inflasi kurang berpengaruh dalam menentukan harga-harga saham pada kedua-dua tempoh masa tersebut.

Indeks Komposit, agregat kewangan dan tukaran asing didapati mempunyai kesan positif ke atas pulangan saham. Sementara itu, kadar faedah didapati mempunyai kesan negatif ke atas pulangan saham. Kesimpulannya, kajian menunjukkan bahawa pasaran saham Malaysia dipengaruhi oleh perubahan pada Indeks Komposit, kadar faedah, agregat kewangan dan kadar tukaran wang asing.

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LIST OF ABBREVIATIONS

CI	Composite Index
EINF	Expected Inflation
ERATE	Exchange Rates
KLIBOR	Kuala Lumpur Interbank Offered Rates
IPI	Industrial Production Index
M1	Narrowly Defined Money
PROP	Property Index
PLANT	Plantation Index
INDUS	Industrial Index

CHAPTER ONE

BACKGROUND OF STUDY

Introduction

Changes in the stock market has an important implication on a country's economy as this serves as a leading indicator of the economy. The reverse of this is also true that changes in the economy do have an effect on the stock market. Various studies have been documented to examine the relationship between the economic fundamentals and stock market. Chen, Roll and Ross (1986), Pearce and Roley (1988), Ariff and Johnson (1990), Cheng (1995), Fitzpatrick (1994), Kwon and Bacon (1997) and many more modeled the relation between stock indexes and macroeconomic data such as production index, interest rates, inflation, gross domestic product, unemployment rate, foreign exchange, dividends yield, etc. The findings revealed that changes in economic fundamentals could predict the stock market variation.

Though there have been a number of documented evidences examining the relationship between macroeconomic factors and stock return in developed market, little attempt appears to have been made to document whether a similar relation is also true in less institutionally advanced countries like Malaysia. Thus, there is a need for such study be conducted in Malaysia in order to examine the relationship between macroeconomic factors and stock returns.

The Malaysian Economy

Malaysia is a relatively small South East Asian country, with a total land area of about 330,000 square kilometers. The country is endowed with rich natural resources, including crude petroleum and natural gas.

by private enterprise, with the Government playing an active role in planning to promote balanced economic growth and social progress.

development of the nation's natural, mineral and human resources, aided by prudent fiscal and monetary management in an environment of political stability, has made Malaysia on the relatively more progressive, prosperous and one of the fastest growing economies in Asia.

Recent Development

The Malaysian economy bounced back to record a 5.4

contraction of 7.

contributed to the superb performance in the trade accounts that served quite significantly in pulling Malaysia out of the recession.

achieved in 1999, 1.6 percentage points of the growth was due to domestic demand while 3.

Asian economies, Malaysia's recovery in terms of GDP growth came in second behind South Korea's 10.

TABLE 1.1
COMPARATIVE ANNUAL GDP GROWTH RATE (%)

Year	Indonesia	Korea	Malaysia	Philippines	Thailand
1995	8.2	8.9	9.8	4.7	8.9
1996	8.0	6.8	10.0	5.8	5.9
1997	4.5	5.0	7.5	5.2	-1.8
1998	-13.2	-6.7	-7.5	-0.5	-10.2
1999	0.2	10.7	5.4	3.2	4.2

(source: Malaysian Institute of Economic Research)

FIGURE 1.1
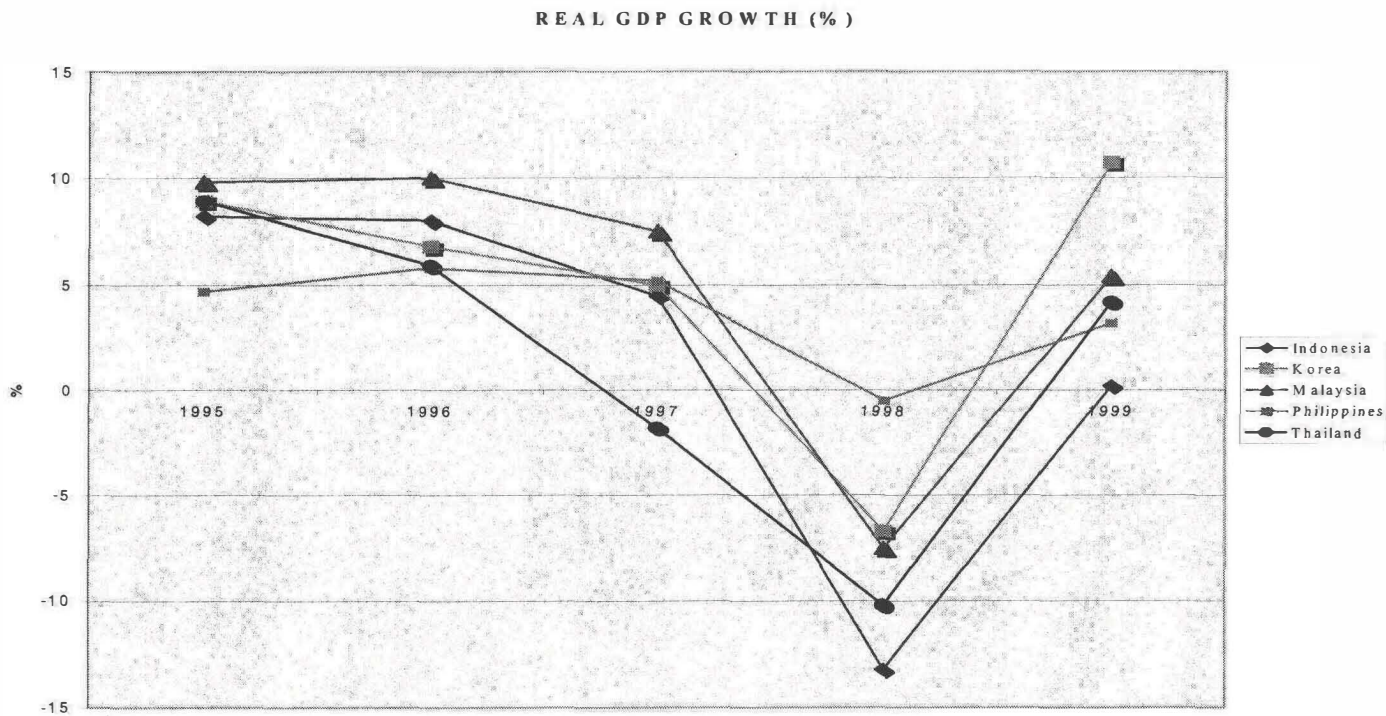
REAL GDP GROWTH (%)

(source: Malaysian Institute of Economic Research)

Per Capita Income

Since independence in 1957, Malaysia has constantly enjoyed a high rate of economic growth. Growth in the gross domestic product at constant prices (real

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GDP) steadily accelerated from an average annual rate of 4.1% in the second half of the 1950s to 8.1% in the 1970s. However, the rate of economic growth slowed down considerably in the early 1980s on account of the prolonged world recession and structural problems in the domestic economy. Since 1987, however, the Malaysian economy has been on a strong recovery path, with real GDP growth averaging 8.3% during 1987 – 92. With the significant strengthening of macroeconomic fundamentals, and combined with the strengthening of improvement of external environment, the Malaysian economy turned around to record unprecedented growth rates during the decades beginning from 1988.

TABLE 1.2 GROWTH RATE OF GDP AT CONSTANT PRICES				
Year	1961 – 1970	1971 - 1980	1981 - 1990	1991 - 1999
	% per annum			
1	1.4	10.0	6.9	9.5
2	6.9	9.4	6.0	8.9
3	5.5	11.7	6.2	9.9
4	5.8	8.3	7.8	9.2
5	5.6	0.8	-1.1	9.8
6	6.2	11.6	1.2	10.0
7	1.0	7.8	5.4	7.5
8	4.2	6.7	9.9	-7.5
9	10.4	9.3	9.1	4.3*
10	5.0	7.4	9.0	
Average	**5.2**	**8.3**	**6.0**	**6.8**
1988 - 1999				7.5
*Estimate				

(source: Bank Negara Malaysia)

Social Progress

Prior to 1988 – 97 period, unemployment was relatively high due to structural adjustments in the economy. The unemployment rate reached a peak of about 8%

during the recession period of 1984 – 86. With rapid expansion in economic activity in the 1990s there was an improvement in the labor market. By 1992, the unemployment rate declined below 4%. This indicates that the economy was operating at a full employment level. The rate of unemployment had declined further to 2.4% by 1997 and there were approximately 1.2 million registered foreign workers. In 1998 – 1999, the number of foreign workers declined significantly while the unemployment averaged at 3.1%.

In terms of poverty, the historical records have shown quite an excellent achievement. The level of absolute poverty had declined to 6.8% in 1997 from 17.3% in 1987 (49.3% in 1970).

TABLE 1.3 UNEMPLOYMENT RATE				
Year	1961 – 1970	1971 - 1980	1981 - 1990	1991 - 1999
	% of labor force			
1	-	6.8	5.0	4.3
2	-	6.3	5.7	3.7
3	-	5.7	5.2	3.0
4	-	5.2	8.3	2.9
5	-	6.4	6.9	3.1
6	-	6.1	8.8	2.5
7	-	6.1	7.3	2.4
8	-	5.4	7.2	3.2
9	-	5.2	6.3	3.0*
10	7.7	5.6	5.1	-
Average		**5.9**	**6.6**	**3.1**
1988 - 1999				3.9
*Estimate				

(source: Bank Negara Malaysia)

Price Stability

The rate of inflation averaged at 3.4% in the period 1988 – 1997. In an environment of rapid growth, buoyant demand and high capacity utilization with high employment, the rate of inflation, as measured by consumer price index, reached a peak of 4.7% in 1992. This level was considered high by Malaysia's standard. The monetary policy has been tightened since 1989 to contain price pressure through its impact on reducing the demand side. Price pressures arising mainly from the depreciation of the Ringgit raised inflation rate to 5.3% in 1998. Subsequently, the stability of the exchange rate, lower commodity prices and excess capacity in the economy led to a significant decline in consumer price.

TABLE 1.4				
GROWTH IN CONSUMER PRICE INDEX				
Year	1961 – 1970	1971 - 1980	1981 - 1990	1991 - 1999
	% per annum			
1	-1.0	1.6	9.7	4.4
2	1.0	3.2	5.8	4.7
3	4.0	10.5	3.7	3.6
4	0.0	17.4	3.9	3.7
5	-1.0	4.5	0.3	3.4
6	1.0	2.6	0.7	3.5
7	5.8	4.8	0.3	2.7
8	-0.2	4.9	2.5	5.3
9	-0.4	3.6	2.8	3.0*
10	1.9	6.7	3.1	
Average	**1.1**	**6.0**	**3.3**	**3.8**
1988 - 1999				3.6
*Estimate				

(source: Bank Negara Malaysia)

The Balance of Payments

Malaysia has always practice very open economy. In 1997, the value of trade amounted to about 170% of gross national product (GNP). Net inflows of foreign direct investment accounted for 34% of private investment.

The current account has been in deficit for a number of years. This has been especially true in the period 1988 – 1998. Between 1961 and 1980, the current account was generally in balance, recording an average deficit of just 0.1% of GNP. The deficit had expanded to 14.1% of GNP in 1982.

TABLE 1.5
CURRENT ACCOUNT OF THE BALANCE OF PAYMENT (RM MILLION)

	1982	1987	1990	1995	1996	1997	1998	1999*
Exports of goods f.o.b	27946	44733	77458	179491	193363	217712	281947	300917
Import of goods f.o.b	29704	30030	70365	179394	183275	207439	212939	226790
Merchandise balance	-1758	14703	7093	97	10088	10273	69008	74127
Balance on services (net)	-6576	-8409	-9723	-19229	-18371	-22748	-22338	-25083
Balance on services (% of GNP)	-11.0	-11.0	-8.5	-9.1	-7.6	-8.5	-8.3	-8.9
Balance on goods and services	-8334	6294	-2630	-19132	-8283	-12745	46670	49044
Transfer (net)	-75	348	147	-2515	-2943	-3345	-9876	-7034
Balance on current account	-8409	6642	-2483	-21647	-11226	-15820	36794	42010
Balance on current a/c (% of GNP)	-14.1	8.7	-2.2	-10.2	-4.6	-5.9	13.7	15.0
*Estimate								
Source: Department of Statistics and Ministry of Finance								

Malaysian Economy: In the New Millennium

Malaysia's economy in 1999 was on the road to recovery. A number of positive signs support this statement. This includes strong trade surplus and external reserve

numbers, lower inflation and fewer layoffs, rising confidence, improving prospects for additional external funding for the Government of Malaysia, a decline in non-performing loans and an impressive stock market performance.

The following are some highlights of the good news [US Embassy(1999)]:

1. Malaysia continues to generate substantial monthly trade surplus (nearly USD1.3 billion in February 1999, the sixteenth consecutive monthly surplus). External reserves, at USD28.2 billion in April.

2. The number of monthly layoffs is down from 1998 levels (5,362 in March 1999 versus 7,125 in August 1998) and passenger car sales are up (19,035 in February 1999 versus 13,701 in August 1998).

3. Consumer and investor surveys indicate improving confidence. The Malaysian Institute of Economic Research (MIER) business conditions index for the first quarter of 1999 rose 3.5 points to 48.5 from the previous quarter and was up 7.2 points from the first quarter of 1998. The MIER consumer sentiment index was up slightly to 84 points in the first quarter of 1999 from 80.5 the previous quarter, but was down from the 88.5 points recorded in the first quarter of 1998.

4. Since the imposition of capital control, the Malaysian government has received funding commitments totaling over USD4.7 billion from various sources including Japan, the World Bank and others.

The management of the Malaysian economy going forward into the new millennium will be more challenging given the developments that are taking place in the international environment. These include further globalization and liberalization of

capital flows, realization of AFTA in 2003, realization of WTO commitments and various schemes of proposals that are now being considered. The key factors that need to be focused, in a global environment that is becoming increasingly more competitive, are enhancing productivity and competitiveness, and leveraging on the knowledge economy. This will enable Malaysia to face challenges as well as reap the benefits from those developments to achieve industrialized nation status consistent with Malaysia's vision 2020.

The Malaysian Stock Market

Malaysia is a small, open economy, which is vulnerable to world economic cycle. During the past decades, the Malaysian stock market has experienced tremendous growth in line with rapid economic expansion. The capital market plays a significant role in economy as capital market provides an avenue to raise much needed fund to stimulate a prudent sustainable economy. The maintenance of an open and liberal economy, coupled with sound macroeconomic management enabled Malaysia to achieve rapid economic growth over the past four decades, with macroeconomic stability and social progress.

The main purpose of the capital market in the country is to raise much needed funds by corporations to support their business activities. This is done by mobilizing medium and long-term funds from a wide cross section of the population to finance public development programmes, and to fund private investment, as well as assisting the banking system in securitising their assets.

The capital market in Malaysia can be divided into primary market, in which new issues of Government and corporate securities are offered to the public as well as financial institutions. The secondary market deals with trading of already issued for stocks and shares, which are done mainly at the Kuala Lumpur Stock Exchange (KLSE).

The KLSE is a self regulatory organization which was established in 1973 to provide a central market place for buyers and sellers to transact business in the shares, debt securities and various other securities of Malaysian listed companies. A significant milestone for the KLSE was achieved in 1990 with the de listing of Singapore incorporated company from the KLSE and vice versa for Malaysian listed on Security exchange of Singapore (SES). This move heralded the growth of KLSE as stock exchange with a truly Malaysian identity. The following indices are commonly used in Malaysia.

 The KLSE indexes are calculated by the exchange every minute with effect from 18th.April 1995. The method of computation is as follow:

$$Index = AMV_1 / AMV_0 * 100$$

where

$AMV_1 = \sum P_1 Q_1$ = Current aggregate market value

$AMV_0 = \sum P_0 Q_0$ = Base aggregate market value

The index is calculated by the weighted average method. The weight used is the market capitalization.