UNIVERSITI PUTRA MALAYSIA

DYNAMIC LINKAGES OF ASIAN EMERGING STOCK MARKETS: AN ANALYSIS OF THE PRE- AND POST-LIBERALIZATION ERA

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By

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in partial fulfillment of the requirements for the degree of Master of Science.

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December, 1998

Chairman : Assoc. Prof. Ahmad Zubaidi Baharumshah, Ph.D.

Faculty : Economics and Management

The main purpose of this thesis is to assess the impact of removal of financial impediments on the ASIAN emerging equity markets. In the recent years the ASIAN countries have attempted to promote economic growth by taking steps to liberalise their domestic financial systems and removing restriction in international capital flows.

countries,

greater role in their financial markets.

An important effect of financial liberalisation policies is the impact on the degree of integration between the emerging markets and the world equity markets. If equity markets are highly integrated, it implies that a given country's market cannot effectively insulate from foreign influences.

linkages of the equity markets in the region with the major world markets by utilising

the Johansen-Juse

tests,

data is used in the analysis covering the period from January 1988 to January 1997. The ASIAN emerging markets selected include Malaysia, South Korea, Taiwan and Thailand while Hong Kong, Japan and the US are considered as the major world markets in vector autoregressive (VAR) model.

The empirical evidence obtained from this study suggests the following. First, market liberalisation appears to have significant impact on all the equity markets. Analysis on iterative Johansen tests, sub-sample analysis and CUSUM tests indicate a possible structural break in the long run relationship among the emerging stock markets and the major exchange markets. Second, national stock markets are becoming more interdependent with the US, Japan and Hong Kong providing the link in the interdependence as one move towards the present liberalise system. Finally, the individual markets are all adjusting more rapidly to the equilibrium paths or stationary fundamental forces as one move towards recent past, and shocks to the system are becoming more persistent in the 1990's.

The results of this study have some important policy conclusions. First, effective and efficient diversification of securities portfolios among international stock markets cannot be achieved given that the markets are cointegrated. Second, in an internationally integrated capital markets the scope for an independent monetary policy is limited. In fact if these countries insist on pursuing a dependent monetary policies the move may have a destabilising effect.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi sebahagian daripada keperluan untuk ijazah Master Sains.

HUBUNG-KAIT DINAMIK ANTARA PASARAN SAHAM DI NEGARA-NEGARA ASIA KIAN MUNCUL : ANALISA SEBELUM DAN SELEPAS DASAR PASARAN TERBUKA

Oleh

TAMAT BIN SARMIDI

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Pengerusi : Profesor Madya Ahmad Zubaidi Baharumshah, Ph.D.

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Tujuan utama tesis ini ialah untuk mengkaji kesan dasar liberalisasi pasaran ekuiti di negara-negara ASIA kian muncul . Dasar pasaran ekuiti terbuka adalah bertujuan untuk mempelbagaikan sumber keewangan alternatif bagi membiayai kepesatan pembangunan dan meningkatkan kecekapan pasaran ekuiti serantau. Walaupun terdapat perbezaan pada masa perlaksanaan dan dasar pasaran terbuka, namun kesemua negara di dalam kajian telah membenarkan pelabur-pelabur luar mengambil bahagian dengan lebih giat dan terbuka di pasaran modal tempatan.

Kesan penting daripada dasar liberalisasi keewangan ialah integrasi di antara bursa saham di negara-negara ASIA kian muncul dan dunia. Jika terdapat kesan integrasi kepada pasaran saham di negara terbabit, ia menjadikannya begitu terpengaruh kepada faktor-faktor luar negara. Dengan tujuan ini, suatu kajian empirik mengunakan kaedah Vektor Autoregresif (VAR) merangkumi kointegrasi multivariate Johansen-Juselius, Model Vektor Pembetulan-Ralat (VECM), Serakan

Varians (VDCs) and Fungsi Tindak Balas (IRFs) dijalankan untuk menganalisa hubung-kait di antara pasaran saham di rantau ini dangan pasaran saham utama di dunia. Data mingguan dari Januari 1988 sehingga Januari 1997 telah digunakan bagi kajian ini. Negara-negara yang dipilih termasuk Malaysia, Korea, Taiwan dan Thailand bagi negara-negara ASIA membangun dan Hong Kong, Jepun dan Amerika Syarikat bagi pasaran utama di dunia.

Keputusan empirik diperoleh menunjukkan beberapa perkara penting. Pertama, dasar liberalisasi menggambarkan kesan yang signifikan terhadap pasaran saham di rantau ini. Analisa berdasarkan ujian CUSUM, iteratif Johansen dan pembahagian sampel menunjukkan terdapat kesan perubahan dasar dalam hubungan jangka panjang di antara negara-negara ASIA kian muncul dan bursa saham utama dunia. Kedua, selepas dasar liberalisasi, pasaran saham di ASIA bertambah saling bersandar dengan Amerika Syarikat, Jepun dan Hong Kong. Akhirnya, setiap pasaran saham bertindak balas dengan kadar yang lebih responsif dan kejutan kepada sistem menjadi lebih berkekalan.

Keputusan daripada kajian ini memberikan panduan penting bagi membuat kesimpulan dasar. Pertama, peluang diversifikasi potfolio di antara negara-negara ASIA tidak dapat dicapai secara berkesan selepas dasar liberalisasi memandangkan bertambahnya kesan saling bersandar atau kointegrasi di antara negara-neggara tersebut. Kedua, skop dasar keewangan yang saling tidak bersandar di antara negara di ASIA menjadi berkurangan dan jika dasar ini diteruskan, ia akan mengakibatkan kesan ketidakstabilan kerana ia bergantung kepada keadaan ekonomi serantau.

CHAPTER I

BACKGROUND OF THE STUDY

Introduction

Liberalisation of ASIAN equity markets has successfully increased the interest of international fund managers to the region. This is evident with the highest fund allocation on this region by international fund management houses. However, financial liberalisation is hypothesised to accelerate markets interdependence or cointegration through substantial increase in international stock market activities. In modern portfolio theory, strong interdependence or high correlation between markets will reduce diversification opportunities offered by the international markets. Diversification would be ineffective because systematic (country) risk cannot be diversified. Therefore, if financial liberalisation accelerates market integration, first, in the long run foreign markets will be less attractive to international investors whose intention are to tap higher return and diversify away portfolio risk. Second, the objective of attracting more capital inflow as an alternative sources of capital from international markets by local market will be jeopardised. On the other hand, if markets are segmented due to legal or physiological factors, international market will be attractive because there will always be some alternative portfolios that may provide higher expected returns.

The primary purpose of this study is to investigate the implications of international financial liberalisation on markets integration in four selected ASIAN emerging equity markets – South Korea, Taiwan, Malaysia and Thailand with selected three major markets – United States of America, Japan and Hong Kong. Recent time-series techniques are employed, including unit roots testing, multivariate cointegration, vector error-correction modelling, forecast error variance decomposition and impulse response function. These techniques are useful to examine the dynamics interdependence of multi-countries stock markets both in short and long term period. The results obtained from this research will be of interest to international funds managers, policy makers and financial analysts whose interest are in the performance of these markets.

International Investments

Solnik (1991) argued that there is a potential problem for investors to confine their portfolio to only domestic market. Domestic securities tend to move in the same direction because they are affected by the same domestic conditions such as money supply announcement, movement in interest rates, budget deficit and economic growth. This creates a strong comovement between all national securities traded in the same exchange. Therefore, investors must have strategies to spreads their risks and diversify away the national market risk. Foreign equity markets provide a potential source for diversification beyond the domestic market. Solnik (1991) provides two reasons why portfolio managers should consider investing in the international markets. First, the international markets may provide a potentially high return and second, for risk diversification. International investors transfer funds across national borders in order to improve the risk-reward of their portfolio. The benefits of diversifying globally have been well documented in numerous studies.

ASIAN Emerging Equity Markets

In recent years, numerous studies have been directed to investigate investment opportunities in ASIAN emerging markets. Generally, they conformed that the region is experiencing rapid economic expansion, high potential market yield and low correlation to developed markets. These development have created uncompromise investors' interest towards the region. This is evident when ASIAN emerging markets has captured the highest capital flow distribution to the developing world. This is apparent in the following Table 1, which gives an overview of the geographical distribution of capital flows to the developing world. For the period 1990 to 1995, 43 percent, the biggest allocation, of world capital flow including foreign direct investment (FDI), portfolio equity and debt flows, commercial lending, and official flows, go to the ASIAN emerging market. Out of total capital flow to the ASIAN emerging markets, 19 percent is portfolio investment to equity markets. It clearly shows that capital tends to move to regions where potential returns are higher (typically to high growth country) and where the market mechanism has taken root.

In the past decade ASIAN emerging countries experienced an average real Gross Domestic Product (GDP) growth rate of 7.2 percent. For example, Malaysia's GDP grew between 7.8 to 9.7 percent over the same period. The average GDP growth for South Korea, Taiwan, Indonesia, The Philippines, and Thailand for the 1989 to 1996 period were 7.8, 6.5, 7.4, 3.5, and 9.1 percent respectively (See Table

2). The trend is expected to continue in future. Cao (1995) provided two reasons why this region could sustain such an impressive growth. First, in the early 1980s this region is gradually detached from the western dominated economy, which is forecasted to have weak economic growth. This is apparent when *Time Australia*, in a 1992 special survey of Asia, reported that Pacific Rim countries were their own best customers. About 65 percent of Asia-Pacific trade were intraregional. Second, economies of this region are in early stage of their development. The World bank's Chief Economist for the East Asia and Pacific region, V. Thomas, noted in late 1993 that, in view of the structural ratios such as the share of population in agriculture, capital labour ratio, and natural resources endowment, the region is in early stage of development and have good potential growth in the future. In 1994 the World Bank has projected that this region's growth will continue to lead the world over the following decade by margin of about 5 percent (See Table 3).

The strong economics fundamentals in ASIAN emerging equity markets are expected to have very good corporate earnings. According to Ariff (1997) their respective yield over the 1983 to 1996 period were 34 percent for Indonesia, 20 percent for Korea, 25.5 percent for Malaysia, 61 percent for the Philippines, 32 percent for Thailand and 40 percent for Taiwan (See Figure 1). In 1994 Lipper analytical services has come up with a report of top performing region in equity funds (See Global Investors, February 1994, p. 9). This region has recorded triple digit advances. The Philippines led the group and recorded 137.1 percent average total return. This was followed by both Malaysia and Singapore (118.8 percent) and Thailand (98.8 percent).

Table 1
Capital Flows to Developing Countries, 1990-1995
(In billions of U.S. dollars)

	1990	1991	1992	1993	1994	1995
Africa						
Net foreign direct investment	1.4	1.6	2.6	1.2	2.2	2.1
Net portfolio investment	-0.2	-0.5	-1.0	-0.9	1.1	0.1
Other 1/	0.8	2.4	1.1	6.9	10.1	10.4
Total net capital inflows 2/	2.0	3.5	2.7	7.2	13.4	12.6
Asia						
Net foreign direct investment	9.4	14.3	14.4	32.7	41.9	52.4
Net portfolio investment	-.09	2.9	9.8	23.8	16.0	18.5
Other 1/	14.6	32.6	7.9	14.0	23.1	33.2
Total net capital inflows 2/	23.1	49.8	32.1	70.5	81.1	104.1
Middle East						
Net foreign direct investment	1.2	1.3	1.8	1.1	-0.5	0.0
Net portfolio investment	2.1	23.2	20.6	15.1	15.9	8.4
Other 1/	-11.4	53.6	19.9	15.6	-5.5	6.7
Total net capital inflows 2/	-8.1	78.1	42.2	31.9	9.9	15.1
Latin America						
Net foreign direct investment	6.6	11.2	12.8	13.9	17.7	17.1
Net portfolio investment	17.4	11.4	17.8	51.6	17.4	10.0
Other 1/	-5.5	0.5	22.5	-2.1	12.1	34.7
Total net capital inflows 2/	18.5	23.0	53.1	63.4	47.2	61.8
All developing countries						
Net foreign direct investment	18.6	28.4	31.6	48.9	61.3	71.7
Net portfolio investment	18.3	36.9	47.2	89.6	50.4	37.0
Other 1/	-1.4	89.1	51.3	34.5	39.8	85.1
Total net capital inflows 2/	35.5	154.4	130.1	172.9	151.6	193.7
(As a percent of total capital flows)						
Africa	5.6	2.2	2.0	4.1	8.8	6.5
Asia	65.1	32.2	24.6	40.7	53.4	53.7
Middle East	-22.8	50.5	32.4	18.4	6.5	7.7
Latin America	52.1	14.8	40.8	36.6	31.1	31.9
Net portfolio investment to Asia	-4.9	7.8	20.1	68.9	45.8	50.0

Source: International Monetary Fund, World Economic Outlook Data Base.
1/ Short and long-term credits; loan (including use of Fund credit); currency and deposits; and other account receiable and payable.
2/ Not including reserve assets.

Table 2
Real Gross Domestic Products (GDP) and Consumer Price Index (CPI) of Selected ASIAN Countries

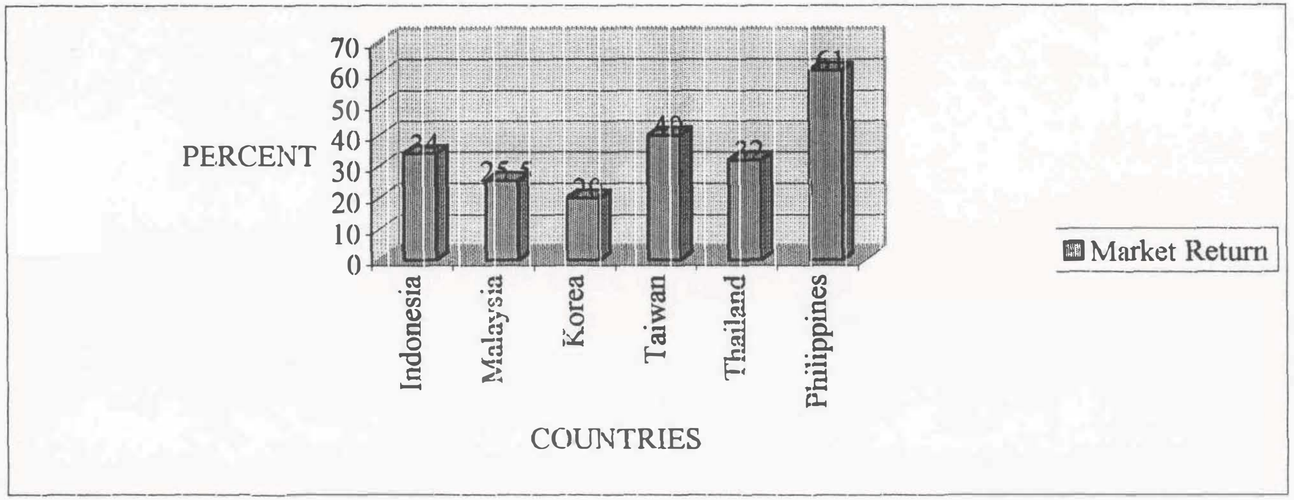
COUNTRIES	MALAYSIA		THAILAND		INDONESIA		PHILIPPINES		S. KOREA		TAIWAN	
YEARS	GDP	CPI	GDP	CPI	GDP	CPI	GDP	CPI	GDP	CPI	GDP	CPI
1996*	8.2	3.6	7.0	4.2	7.6	9.1	5.9	8.5	7.3	4.9	6.0	3.6
1995	9.5	3.4	8.7	5.8	8.1	9.4	4.8	8.1	9.0	4.5	6.1	3.7
1994	9.2	3.7	8.8	5.0	7.5	8.5	4.4	9.0	8.6	6.3	6.5	4.1
1993	8.3	3.5	8.3	3.3	7.3	9.7	2.1	7.6	5.8	4.8	6.3	2.9
1992	7.8	4.8	8.1	4.1	7.2	7.5	0.3	8.9	4.5	6.2	6.6	4.5
1991	8.6	4.4	8.1	5.7	8.9	9.4	-0.6	18.9	8.4	9.3	7.2	3.6
1990	9.7	2.6	10.0	6.0	7.0	7.4	2.7	14.2	9.2	8.6	5.1	4.1
1989	9.2	2.8	12.0	5.4	7.4	6.5	5.6	12.2	6.2	5.7	7.6	4.4
1988	8.7	2.5	11.0	3.8	5.7	5.6	6.6	8.8	11.5	7.1	7.3	1.3

Source: Economic Report, Ministry of Finance Malaysia, various issue.
Note * = estimate

Table 3
Forecast Real Gross Domestic Products (GDP) Growth

Countries	Trend 1974-1990	Recent estimates 1991-1993	Forecast 1994-2003
G-7	**3.3**	**1.2**	**2.7**
Europe and Central Asia	**3.1**	**-9.8**	**2.7**
East Asia	**7.3**	**8.3**	**7.6**

Source: World Bank, Global Economic Prospects and the Developing Countries, April 1994, and Cao, K. 1995 p: 3.



Source: Ariff, M., 1997.

Figure 1
Market Returns For ASIAN Emerging Markets (1983-1996)

The benefit from portfolio diversification could be another reason for investing in the ASIAN region. In last two-decade ASIAN emerging equity markets have been under much attention of international investors who want to push out the efficient frontier in the parlance of modern portfolio theory. Some empirical studies have been conducted to investigate the benefit of portfolio diversification by investing in the region. Example of these studies include those by Cheung and Ho (1991), Chan, Cup and Pan (1992), Cheung and Mak (1992), Cha and Cheung (1993) and Hung and Cheung (1995), among others. In general, the studies have shown the benefit of investing in the region.

However, in recent years the region has undergone, and is still undergoing, rapid structural change of its legal framework. These changes lead the region to be more liberal and open which is hypothesised to induce markets integration. Therefore, the primary purpose of this study is to investigate the implications of international financial liberalisation on markets integration in ASIAN emerging equity markets before and after undergoing these structural changes.

Liberalisation in ASIAN Emerging Markets

Liberalisation programmes are aimed to attract more capital inflow for the enhancement of local privatisation programme and accelerate local equity market efficiency. Equity financing is an alternative and relatively cheap source of capital, though it is more volatile compared to debt financing or foreign direct investment (FDI).

The timing and the extent of financial liberalisation in the ASIAN markets varied across countries. Hong Kong removed interest rate and exchange controls in the mid-1970s. Later Japan and Malaysia took steps towards liberalisation in the late 1970s. Korea, Taiwan and Thailand took a little longer, and started reforms only in the late 1980s. Recent reforms include the removal of various restrictions on foreign investments and the equity markets.

Consequently by 1992, most ASIAN equity markets have opened up to foreign portfolio investors although some remaining regulations continue to limit their scope. In the next section, selected liberalisation programmes in some of the ASIAN economies are briefly discussed.

Taiwan

Prior to 1983, foreigners cannot freely invest in Taiwan's security market. In 1983, new legislation and regulation made it possible for foreigners to make portfolio investment via regulated investment trust funds. A further step toward liberalisation of the financial markets occurred in March 1989, when foreign insurance companies with branches in Taiwan were permitted to make limited investments in listed stocks. The government of Taiwan opened the Taipei Stock Exchange (TSE) to direct foreign institutional investment towards the end of 1990. The reason for market liberalisation was a weak performance of TSE due to political uncertainty and high oil prices following the Gulf War. As a result, by end of 1992, 34 foreign institutional investors were allowed to invest in TSE. Presently there are no foreign exchange control over portfolio investment except for individual foreign investors and foreign companies other than qualified institutional investors. All other transaction involving inward or outward remittances for domestic companies have a US$20 million annual ceiling per account. Individual may import or remit a maximum of US$5 million a year without seeking approval from the relevant authorities (Roc, 1995 and Stanley, 1995).

South Korea

The opening of the Korean market to foreign investors was only a rumour as late as 1988. In 1989, the Korean government allowed foreigners holding convertible bonds floated overseas by Korean companies to acquire domestic shares within certain limit if they wished to convert the bonds into shares. In August 1991 the Korean Ministry of Finance announced that the stock market would be opened to direct investment by foreign national beginning in January 1992. The Korea Stock Exchange (KSE) opened to individual foreign investors in 3rd January 1992. However the procedures that govern foreign investor activity on the KSE remain complex and restrictive (Kim 1995). In July first, 1994 Korean Bond market was opened to foreign investors and on December first, 1994 foreign investment ceiling has been extended from 10 to 12 percent. Later in July first, 1995 this restriction further relaxed to 15 percent. Presently this restriction has been further expanded up to 20 percent. Up to mid of 1996, a net of 12.5 billion dollars has flown into domestic stock market (Doh 1996).