

## Chapter 4

### The Empirical Results

The empirical results in measuring of the level of Asian stock market integration are discussed in this chapter after the models are discussed in the previous ones. The important assumption in applying the CAPM to international financial markets in this estimation of the degree of integration is that the conditional expected return on any asset is linearly related to the conditional covariance between that asset and the return on a world capital market portfolio. If the Asian stock markets are fully integrated, the world capital market risk is the only relevant factor, which is very rigid restriction, the price of covariance risk should be positive and equal across all markets. Hence, the deviation-from-zero of  $\alpha_{i,t}$  in equation 12 will show the degree of the integration to the world capital market. The non-zero value of  $\alpha_{i,t}$  implies some impediments in capital flow between nations. As mentioned earlier that the free flow of capital is an important condition for equalizing the price of the risk given the market clearing condition.

#### 4.1. The barriers of foreign investment

Before going on discussion of the empirical results, it would be better discussing the barriers to investment for better understanding of the empirical results. Bekaert (1995) distinguish between three kinds of barriers. First are legal barriers arising from the different legal status of foreign and domestic investors. For example, the ownership restriction can be differently effective between local and foreign investors. Another example in this category is the different tax treatment. Second are indirect barriers arising from differences in available information, accounting standard, and investor protection. Third are barriers arising from emerging-market-specific risks (EMRS) that discourage foreign investment and lead to *de facto* segmentation. EMRS include liquidity risk, political risk, economic policy risk, macro-economic instability, and, perhaps, currency risk. Some might argue that these risks are diversifiable and are not priced. However, such an argument seems inconsistent with the amount of resources spent on. Chohan (1992) surveys the market participants in Canada, Germany, Japan, the United Kingdom, and the United States and reports liquidity problems as a major impediment to investing in emerging markets. But the survey yielded the surprising result that restrictions in host economies are not a crucial factor. The other EMRS are related to the notion of country risk. For example, credit ratings not only reflect assessments of political stability but also incorporate factors related to the economic environment. Unstable macro-economic policies, for instance, appear to have detrimental effects on stock market performance.

The barriers to foreign investment discussed above affects the level of integration of stock markets. Either the increase in control or increase in liberalization can affect the measure of stock market integration. Moreover, Bhattacharya et al. (1997) explains the change in the level of stock market integration may be due to the change in fundamental of economies. When there are changes in fundamental, new equilibrium will be reached through the economic adjustment process. This could also be observed in the change in the level of stock market integration. Another remarkable behavior in changes of the level of stock market integration is that after the surge in the level of stock market integration, there is often followed by the overshooting of the level of integration and resolved to the integration later.

Most of the studies, concerning the measure of degree of stock markets integration, regularly pay attention to the emerging stock markets during the 1980s and the beginning of 1990s. They usually conclude that the emerging stock markets become more integrated to world capital market since the early of 1990s which is not wrong. Thus, in this study, the level of stock market integration during the period of 1990 – 1999 is usually high. In other words, the emerging stock markets of Korea, Malaysia, Philippines, Taiwan, and Thailand becomes integrated to world capital market relatively high, considering this period and the period of 1980s. However, the attempt to liberalize the financial markets for those Asian countries was not over at that period. They still develop their national financial system continuously. Also, some event affecting the degree of stock market integration is still effective.

#### **4.2. The degree of Asian stock markets integration**

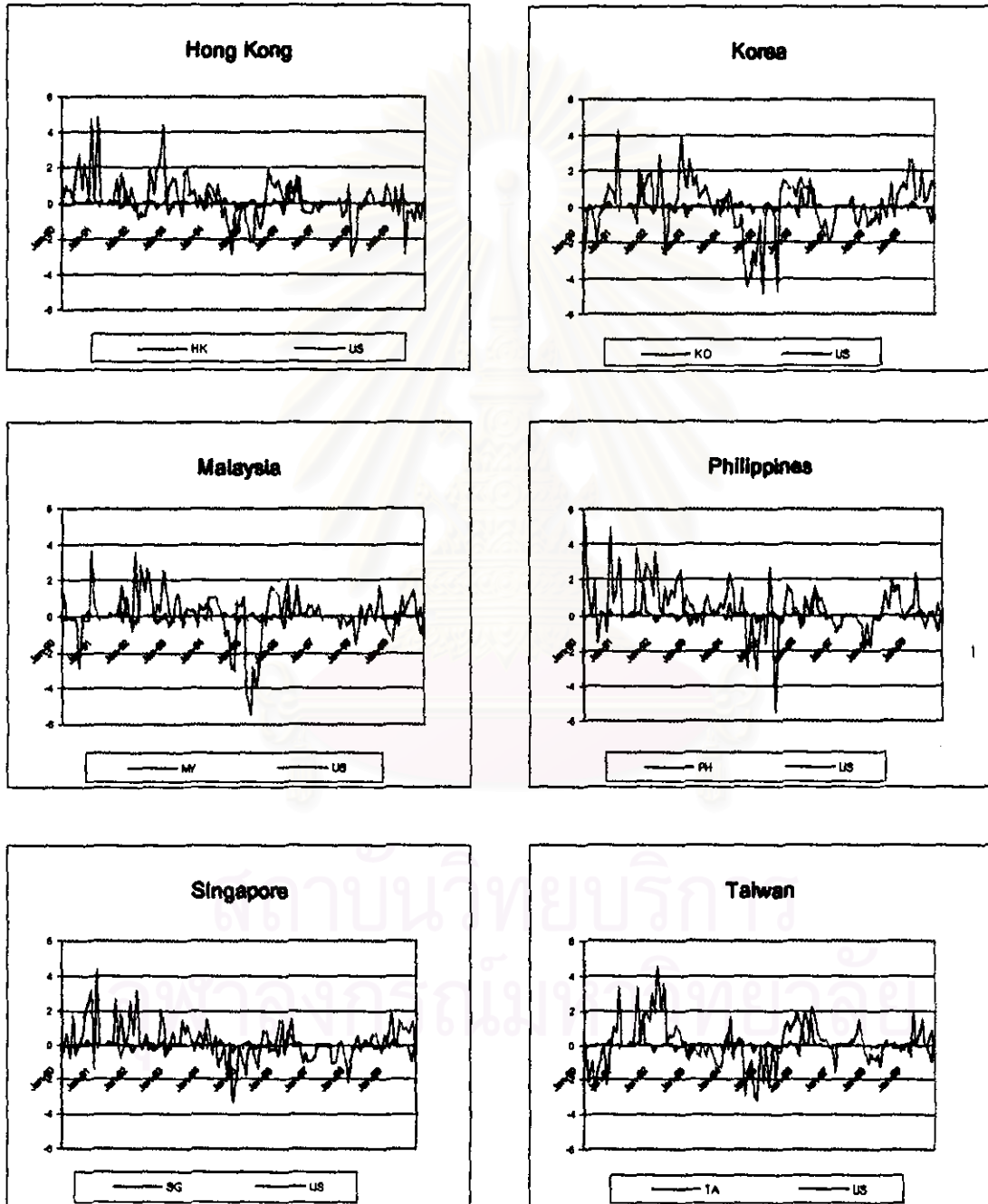
The results from the estimation are plotted for each national market in the figure 4.1. The time-series averages of the values of  $\alpha$  and  $\alpha^2$  including other statistics calculated are reported in table 4.1, and 4.2., respectively. The result of U.S. stock market is also estimated and shown in those figure and tables for comparison purpose.

Roughly, the selected Asian markets in this study can be categorized as two main groups, the developed markets and the emerging markets. U.S. market, as stated, is also picked up to be the referenced market. The developed Asian markets are Hong Kong and Singapore stock markets. The emerging Asian stock markets are Korea, Malaysia, Philippines, Taiwan, and Thailand. Most of the previous studies found that the developed stock markets tend to exhibit higher degree of market integration than those of emerging stock markets. This previous finding is consistent with what is recently found in this study.

Figure 4.1.

The Price Deviation of Stock Markets

The measure of stock markets integration as measured by the deviation from theoretical price ( $\alpha$ ) is estimated. The time-series of the value of  $\alpha$  are plotted for each Asian country. U.S. stock market estimation is also reported for comparison to those of Asia. The value of  $\alpha$  could be either positive or negative. The closer to zero, the higher the degree of integration is implied. The estimation covers the period between January 1990 – December 1999.



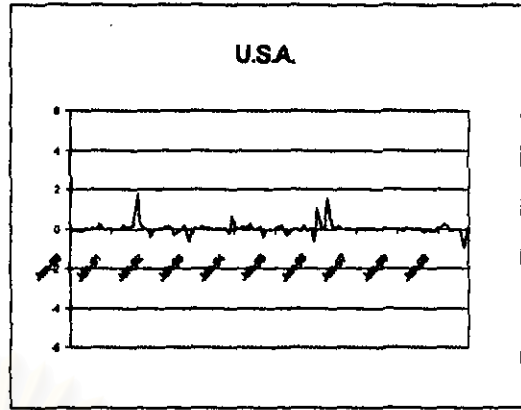
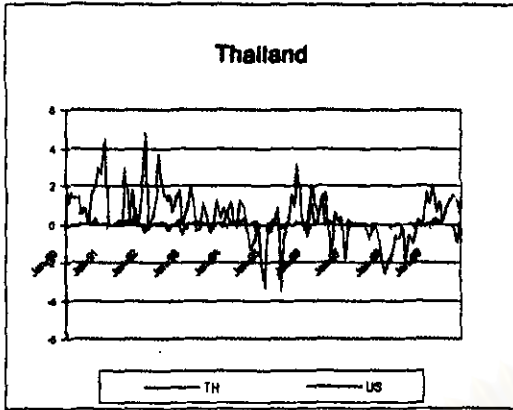
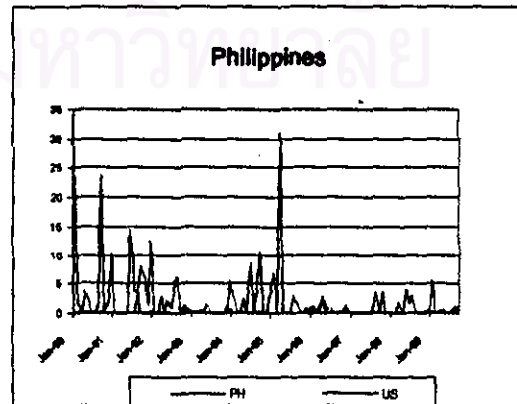
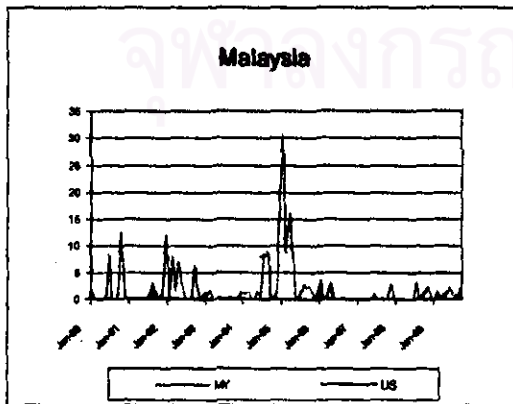
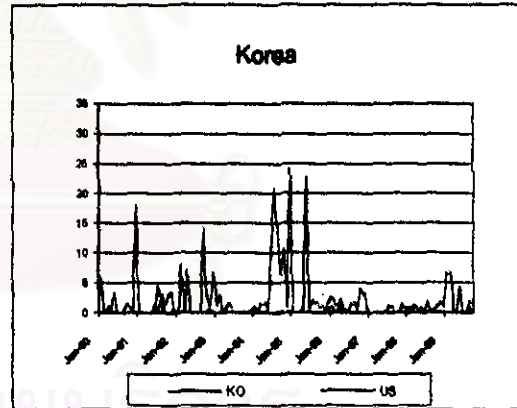
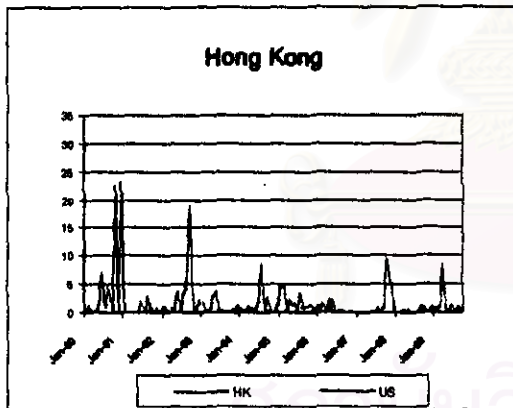


Figure 4.2.

The Adjusted Price Deviation of Stock Markets

The measure of stock markets integration as measured by the deviation from theoretical price ( $\Theta$ ) is estimated. The time-series of the squared value of  $\Theta$  are plotted for each Asian country. Each  $\Theta$  is squared to compare the degree of integration regardless of its direction of the deviation. U.S. stock market estimation is also reported as benchmark to those of Asia. The closer to zero, the higher the degree of integration is implied. The estimation covers the period between January 1990 – December 1999.



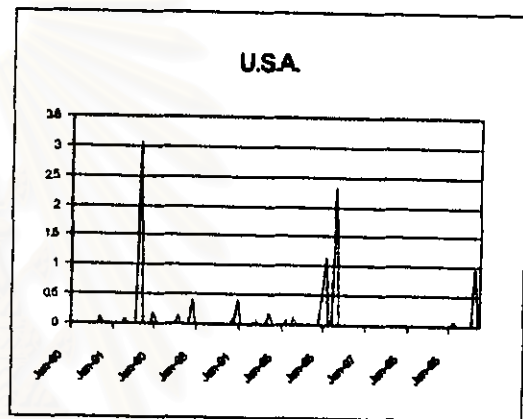
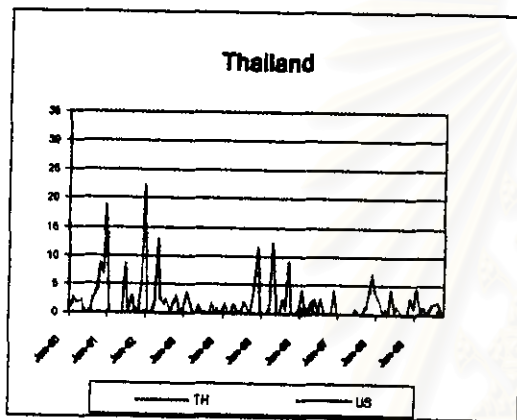
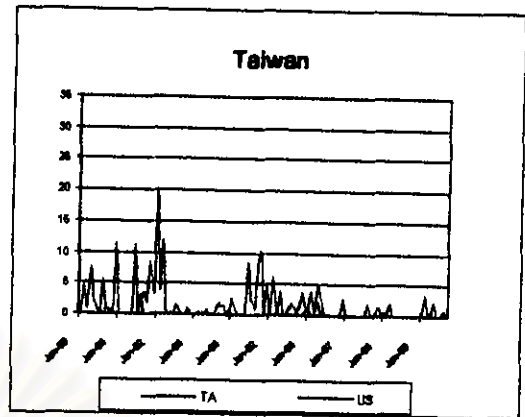
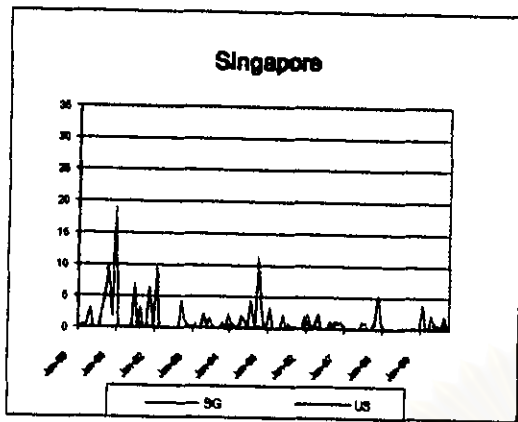


Table 4.1.

The Price Deviation of Stock Markets

The measure of stock markets integration as measured by the deviation from theoretical price ( $Q$ ) is estimated. The time-series averages of the value of  $Q$  are reported for each Asian country. U.S. stock market estimation is also reported for comparison to those of Asia. The value of  $Q$  could be either positive or negative. The closer to zero, the higher the degree of integration is implied. The estimation covers the period between January 1990 – December 1999.

Price deviation of stock markets ( $Q$ )								
	Hong Kong	Korea	Malaysia	Philippines	Singapore	Taiwan	Thailand	US.
AVG	0.2279	0.0591	0.1128	0.4843	0.1562	0.0761	0.4835	0.0189
STD	1.3394	1.6263	1.4656	1.5049	1.1841	1.4041	1.4100	0.2986
Min	-3.0565	-4.8987	-5.5068	-5.5339	-3.3148	-3.1965	-3.4812	-0.9775
Max	4.7968	4.2170	3.5207	4.8845	4.3332	4.4831	4.8880	1.7442

The computed statistics shown in table 4.1. may not convey much information because the value of the "mispricing" or the deviation from the theoretical price ( $\alpha$ ), which implies the degree of integration, can be either positive or negative value. The average of the mispricing could be affected by the cancellation of the signs. The table 4.2. shows the squared value of the mispricing. This could solve the problem of ambiguous results caused by the different direction of the mispricing.

Table 4.2.  
The Adjusted Price Deviation of Stock Markets

The measure of stock markets integration as measured by the deviation from theoretical price ( $\alpha$ ) is estimated. The time-series averages of the squared value of  $\alpha$  are reported for each Asian country. Each  $\alpha$  is squared to compare the degree of integration regardless of its direction of the deviation. U.S. stock market estimation is also reported as benchmark to those of Asia. The closer to zero, the higher the degree of integration is implied. The estimation covers the period between January 1990 – December 1999.

<i>Adjusted price deviation of stock markets (<math>\alpha^2</math>)</i>								
	<i>Hong Kong</i>	<i>Korea</i>	<i>Malaysia</i>	<i>Philippines</i>	<i>Singapore</i>	<i>Taiwan</i>	<i>Thailand</i>	<i>US.</i>
AVG	1.5487	2.2408	1.7731	2.0953	1.1585	1.6732	1.8847	0.0849
Rank	(3)	(8)	(5)	(7)	(2)	(4)	(6)	(1)
STD	3.8718	4.4627	4.2111	4.8850	2.5498	3.0841	3.4988	0.3755
Min	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Max	23.0095	23.9974	30.3253	30.6244	18.7768	20.0981	21.9771	3.0423

From table 4.2., the value of the average squared mispricing for U.S. stock market is the smallest. The two developed Asian stock markets in this study, Singapore and Hong Kong, are the second and the third rank in term of the mispricing, respectively. From the table 4.1., the largest deviations from the value of zero occur for Philippines, with values  $-5.5339$  that occur around March 1995. In average, Korea seems to be the least degree of integration according to her adjusted price deviation, 2.2408. Taiwan, Malaysia, and Thailand can be classified in the same group of the degree of integration, reported in table 4.2. The value of the average squared mispricing for the three countries are different around .1 (1.6732, 1.7731, 1.8847) for each ranked country. Philippines is ranked the seventh among those eight countries in the sample with the average squared mispricing value of 2.0953.

According to table 4.1., the maximum value of price deviation of Hong Kong stock market, Hang Seng, is 4.7966 while the lowest is  $-3.0565$ . The average price deviation is 0.2279 with the



standard deviation of 1.3394. In table 4.2., the average adjusted price deviation is 1.5467 with the standard deviation of 1.5588.

From table 4.2., it can be seen that the average adjusted price deviation of Korean stock market is 2.2408. The standard deviation of the adjusted price deviation of Korean stock market is 4.4627. The price deviation of Korean stock market from table 4.1. report the value of 4.2170 and -4.8987 as the highest and lowest value of  $\alpha$ . In the period of June 1991, the ministry of finance of Korea announces guidelines for opening the stock market to foreigners in January 1992. From the figure 4.1., it could be observed that there is a change direction of mispricing from negative to positive. This may indicate the adjustment to the new equilibrium with some overshooting. This kind of liberalization may reflect positively to the expected return on Korean stock market. In March 1992, The Daehan, Korea, and Citizen investment trusts have to be bailed out as they have collectively (for the year) lost \$680M. The trusts are a major source by which Koreans invest in the stock market. This event results in shock of the  $\alpha_{\text{Korean}}$  around that period but resolve to the value of zero very soon. One thing that may be observed from reconciliation of the  $\alpha$  and the observed events is that after the temporary shock, the adjustment to the integration often experiences the overshooting. In 1993, from the second quarter of the year, the government publishes a five-year plan for the reform and liberalization of the financial system for Korea. They are (1) complete the interest rate deregulation, (2) establish a financial futures market, (3) fade out of policy loans, (4) *program to bring Korean accounting standards up to international level*. It is widely accepted that the accounting standard is one of the most important barriers in investment considering the informational efficiency and reliability to those from abroad. We can see the downward of the  $\alpha$  in that period which approach zero. This implies the higher degree of market integration for Korean stock market during that period. Moreover, there are another two events that might effect the higher degree of Korean stock market integration in that period. In June 1993, It is announced that starting in 1994, foreigners will be able to invest directly in convertible bonds and starting on August 1993, they will be able to buy unlimited amounts in joint ventures of which foreigners already own 50%. In July 1993, foreigners are permitted to own up to 20 shops and the maximum area is lifted to 3000 square meters per shop. These two events might help increase the confidence of investment in South Korea. Many events concerning the financial liberalization still went on during 1993<sup>9</sup> which results in the near-zero value of the mispricing as seen in the figure 4.1.

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<sup>9</sup> For full detail of the events, see the appendix.

The price deviation of Malaysian stock market lies between  $-5.5068$  and  $3.5207$  with the standard deviation of  $1.4656$ . From the table 4.2., the average adjusted price deviation of Malaysian stock market is  $1.7731$  with the standard deviation of  $4.2111$ . In June 1990, The telecommunications minister of Malaysia, Sammy Vella announces that up to 25% of Malaysia's National Electricity Board will be available to foreign investors. A fund is set up in September 1990 and company privatized by March 1991. This may be perceived as the wider open of the Malaysian market which also affect the degree of stock market integration in that period. At the beginning of 1994, capital controls were imposed in response to a sharp acceleration of capital inflows in 1993. Looking at figure 4.1., it could be observed that between the period of 1994 and beginning of 1996, there are sharp surge in the value of  $\alpha_{\text{Malaysia}}$  obviously. The capital control measures in Malaysia included the imposition of limits on the foreign exchange liabilities of banks, the extension of reserve requirements to such liabilities. Moreover, it also included a ban on the sale of short-term securities to foreigners by residents, and the imposition of a regulation requiring that domestic currency deposits of foreign institutions be non-interest-bearing. This was followed in February by a halt to trade-related swaps and the imposition of fees on non-interest-bearing foreign deposits. Controls were gradually removed over the course of 1994, and by the beginning of 1995, only the reserve requirement for the foreign currency liabilities of banks remained in place.

Table 4.1. reports the average price deviation of Philippines stock market as  $0.4843$  with the standard deviation of  $1.5049$ . The average adjusted price deviation of Philippines stock market is  $2.0953$  with the standard deviation of  $4.6850$ , according to the table 4.2. The maximum and minimum value of the price deviation is  $-5.5339$  and  $4.6645$ , respectively. At the end of 1989, the first Philippines Fund is launched. The observed event might affect the value of  $\alpha_{\text{Philippines}}$  and the sign of overshooting in the beginning of 1990. In the middle of 1990, the Philippines cabinet approves an economic reform package. They are (1) abolition of price controls, (2) *relaxation of foreign investment*, (3) *deregulation of financial markets*, (4) acceleration of privatization, and (5) reductions in import tariffs. The response of that announcement can be obviously observed in the figure as the shock in the value of  $\alpha_{\text{Philippines}}$  and adjust to the integration rapidly. In the middle of 1994, the 40% ceiling on foreign equity is removed in many sectors. This may be an evidence of invitation of the flow of capital from abroad. Such capital flow reflects in the negative value of the  $\alpha_{\text{Philippines}}$  in that period.

Singapore is not classified an emerging Asian stock market. The value of the degree of market integration, indicated by the price deviation of Singaporean stock market, is between  $-3.3148$  and  $4.4831$ . The average price deviation is  $0.1562$  with standard deviation of  $1.1841$ . From table 4.2., the value of average adjusted price deviation is  $1.1585$  with standard deviation of  $2.5498$ .



The price deviation of Taiwanese stock market lies between  $-3.1965$  and  $4.4831$  with the standard deviation of  $1.4041$ . From the table 4.2., the average adjusted price deviation of Taiwanese stock market is  $1.6732$  with the standard deviation of  $2.0841$ . In the third quarter of 1990, the Labor Insurance Fund (pension fund) is granted permission to invest up to 20% of its NT\$ 43B in assets in the stock market. The government announces that foreign institutional investors will be allowed to invest directly in the stock market instead of just through the 4 large mutual funds established in 1985. These two events affect the price deviation. The second event might impact the degree of integration. Around that period in figure 4.1., it could be observed that the direction of the  $\alpha_{\text{Taiwan}}$  is changed and resolved to the zero value of the deviation. In March 1992, the minister of finance, Wang Chien-Shien, approves Taiwanese companies to issue Global Depository Receipts (GDR). This implies the higher level of openness to world capital market, which should be reflected in the level of integration. Another major liberalization in Taiwanese stock market occurred around the end of 1993. The finance ministry announced that it is going to raise the foreign ownership limit from 5 to between 10 and 15% for a single entity. The total foreign ownership limit will be raised to between 20 and 30%. Also, all limits on outward remittances of principal and capital gains will be abolished. This can be seen coincided with the movement of the  $\alpha_{\text{Taiwan}}$  in figure 4.1. Again, the governor of Taiwanese central bank announced that the limit on foreign ownership in the Taiwanese stock market would be raised in July 1994.

From table 4.2., it can be seen that the average adjusted price deviation of Thai stock market is  $1.8847$ . The standard deviation of the adjusted price deviation of Thai stock market is  $3.4968$ . The price deviation of Thai stock market from table 4.1. report the value of  $4.6880$  and  $-3.4812$  as the highest and lowest value of  $\alpha$ .

Alba et al. (1998) reports that there is huge amount of capital flows to Asian markets in term of both foreign direct investment (FDI) and foreign portfolio investment (FPI) during the bubble period, especially between 1993 – 1996. The flood of such capital flows affects all Asian countries. Looking at figure 4.1., we can obviously see the surge in the degree of stock market integration,  $\alpha$ , during the period.

Another interesting surge of the degree of Asian stock market integration can be detected during the period of Asian financial crisis. One of possible explanation of this surge is that during the period of the crisis, the non-diversifiable risk concerning the investment in these Asian countries

becomes higher. The higher risk commands the higher expected return from the investment. Thus, we could observe the change in the estimated degree of stock market integration.

### 4.3. The likelihood of Asian stock markets integration

The likelihood of Asian stock markets integration is estimated based on the regime switching model. Bekaert and Harvey (1995) explain that the integration measure in this category is a time-varying weight that is applied to the covariance and the variance. The model allows for a differing price of variance risk across countries, which depends on country-specific information, and a world price of covariance risk, which depends only on global information.

Table 4.3.  
The Likelihood of Asian Stock Markets Integration

The measure of stock markets integration as measured by the probability that the market will be integrated ( $\phi$ ) is estimated. The time-series averages of the value of  $\phi$  are reported for each Asian country. U.S. stock market estimation is also reported as benchmark to those of Asia. The closer to one, the higher the degree of integration is implied. The estimation covers the period between January 1980 – December 1999.

<i>The Likelihood of Asian stock markets integration (<math>\phi</math>)</i>								
	<i>Hong Kong</i>	<i>Korea</i>	<i>Malaysia</i>	<i>Philippines</i>	<i>Singapore</i>	<i>Taiwan</i>	<i>Thailand</i>	<i>US.</i>
AVG	0.9009	0.8621	0.8491	0.8298	0.9010	0.8687	0.8498	0.9010
Rank	(3)	(5)	(7)	(8)	(1)	(4)	(6)	(1)
STD	0.0255	0.0244	0.0407	0.0264	0.0265	0.0268	0.0234	0.0277
Min	0.8102	0.7743	0.5052	0.6947	0.8102	0.7832	0.7652	0.8102
Max	0.9995	0.9460	0.9051	0.8924	1	0.9173	0.9041	1

The probability that the market becomes integrated to world capital market is referred as the likelihood stock market integration. The average likelihood of Asian stock markets integration, including the U.S. stock market, are reported in the table 4.3. The standard deviation and the range of the value of the likelihood are also reported in the same table. The time-series of the likelihood of stock markets integration are plotted in the figure 4.3.

The likelihood of Asian stock markets integration approaches one for every countries in this study. This is consistent with what is concluded by Bekaert and Harvey (1995). By this measure of level of stock market integration, the developed countries, both Asian (Hong Kong and Singapore) and United States, exhibit the equally high level of the integration to world capital market. The rank

obtained from this regime to those of the degree of stock market integration yields the different results for Korea, Malaysia, and Philippines. However, the difference is not much significant.

The average value of the likelihood of stock market of Hong Kong is 0.9009 with standard deviation 0.0255. The ex ante probability of integration lies between 0.8102 and 0.9995 through the entire sample. Comparing with the degree of stock market integration in term of mispricing, the likelihood of stock market integration for Hong Kong moves on quite the same direction, approach the high integration.

Korea should not be categorized as an Asian emerging market because of its high per capita GDP. The evidence from both estimations suggests that this market is integrated to world capital market. The ex ante probability of integration lies between 0.7743 and 0.9460. The average likelihood of integration is 0.8621. The standard deviation, which shows the distribution of likelihood of stock market integration, of Korea is 0.0244.

The Korean stock market definitely clears the liquidity hurdle. It is the third most active emerging market (behind Taiwan and Thailand) with over 100 percent of its market capitalization turning over each year. In term of total capitalization, Korea is also the third largest emerging market (behind Mexico and Taiwan) and the fifteenth largest equity market in the world. Regulations on foreign participation prohibited direct access to the Korean market until January 1992. Also, there are other ways for foreigners to access the Korean market. Korea has more than 17 U.S. dollar denominated country funds and also non-U.S. dollar country funds. Many of these country funds have a long history (Korea Trust began in 1981) and have allowed foreigners to participate, to some degree, in the Korean market.

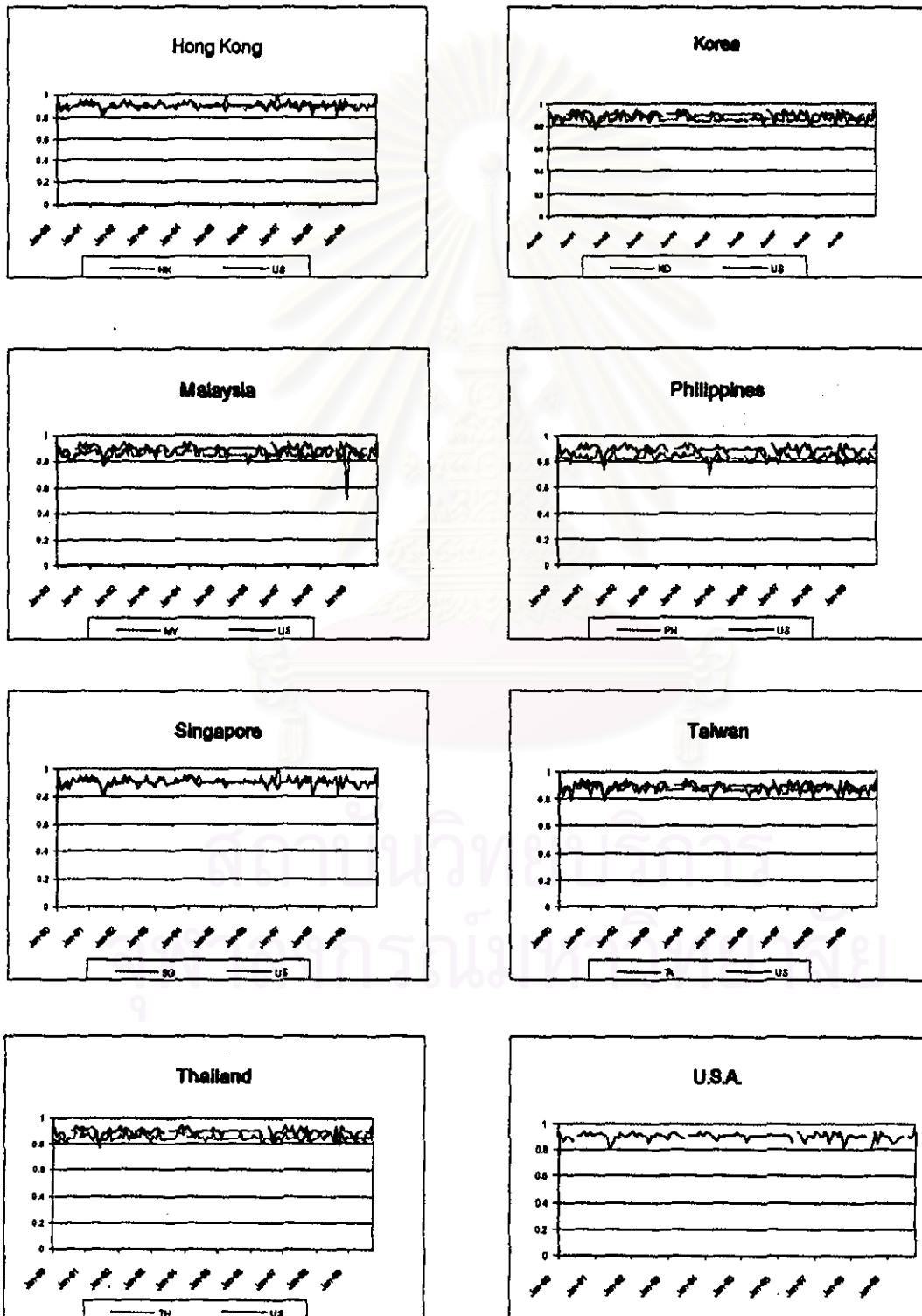
Cumby and Khantavit (1992) study a regime-switching model for the Korean stock market jointly with the world market. They allow a different mean and variance in each regime, but there is no time-variation allowed in either. They found that it is difficult to attribute the regime switches to policies concerning capital market integration. Bae (1993) also studies the Korean equity market. He found that both domestic and international factors are important in pricing Korean equities and that the Korean market has become more integrated with world capital markets.

Malaysian stock market is also quite liquid. Malaysia has experienced very mild inflation averaging only 4.6 percent over the past 25 years. However, the Malaysian culture and its governance is quite interesting. The less democratic politics in Malaysia, comparing to the other

Figure 4.3.

The Likelihood of Stock Markets Integration

The measure of stock markets integration as measured by probability that the market become integrated to world capital market is estimated. The time-series of the value of  $\phi$  are plotted for each Asian country. U.S. stock market estimation is also reported for comparison to those of Asia. The value of  $\phi$  is bounded between 0 and 1. The closer to 1, the higher the degree of integration is implied. The estimation covers the period between January 1990 – December 1999.



countries in our study, is one thing that anyone could easily feel. Discipline in all aspects, including the financial and economics discipline, is assigned and practiced quite strictly. The strict capital control imposed on October 1, 1998, in effort to thwart the perceived destabilizing actions of foreign speculators, affects the degree and likelihood of stock market integration quite obviously. Such control affected the likelihood of Malaysian stock market integration as shown in the figure 4.3.

Prior to the period of Asian economics crises, foreigners play a large role in the Malaysian market. Participation in the market by foreigners was up to nearly 30 percent. Although the Foreign Investment Committee imposed the limitation of foreign investment in Malaysia to 30 percent of equity, it is not clear that this constraint is binding. Foreigners can access more than 11 close-end fund, open-end funds. All these factors suggest that the market is integrated.

The average likelihood of Malaysian stock market integration is 0.8491. It lies between 0.5052 and 0.9051. The measure of likelihood of integration confirms the estimated degree of Malaysian stock market integration. The standard deviation of the likelihood of stock market integration of Malaysia is 0.0407.

Like other countries, Philippines, more or less, belongs to the influence of world capital market integration. The average value of the likelihood of Philippines stock market integration is 0.8298 with the standard deviation of 0.0264. The value of the likelihood of market integration lies between 0.6947 and 0.8924.

As mentioned before, Singapore, according to the results from the estimation, is the comparatively highest integrated to world capital market among the group of studied countries. The average value of the likelihood of stock market integration is 0.9010. The standard deviation of the likelihood of stock market integration is 0.0265. The value lies between 0.8102 and 1.

Taiwan is another country that exhibits very high level of the likelihood of stock market integration. Factors favoring integration included the high market capitalization and the very large trading volume. Taiwan should no longer be classified as an emerging market because it's high per capita GDP. Factors that work against integration are the regulations controlling the amount of foreign equity ownership. Foreign ownership was first allowed in 1983 but restricted to four approved investment funds. Foreign individuals can not invest directly. In addition, some industry is not investable, others have investment limits. Furthermore, no single investor can own more than 5

percent of a firm's equity. However, some of the barriers were liberalized as discussed in the section 4.2., resulting in the very high value of the likelihood of stock market integration.

The estimation results suggest that Taiwan stock market is integrated to world capital market. The average value of likelihood of stock market integration is 0.8687 with the standard deviation of 0.0268. The value of likelihood of stock market integration lies between 0.7832 and 0.9173.

In Thailand case, using a different methodology, Cumby and Khantavit (1992) show a large shift in the degree of integration in 1986 from 0.1 to 1.0. This change coincides with the beginning of trading on the Alien board. Most Thai stocks have foreign ownership limits, though relaxation must be bound after the recovery of economics crisis. When the limits are met, identical shares (in terms of dividends and voting rights) are traded on two exchanges, the Main board – for resident Thais, and the Alien board – for nonresidents [Bailey and Jagtiani (1994)].

The existence of the Alien and Main boards implies some direct access barriers for foreigners. In addition, foreigners are not allowed to own property in Thailand, prior to the Asian economics crises. As a result of the property restrictions, a corporation can not have greater than 49 percent foreign ownership. Although there are ownership restrictions, the foreigners have a long history of participation in the Thai market. Kiranand (1995) also shows the downtrend in the premium gap between the return from the Main board and the Alien board after the announcement of the implementation of Thai Trust Fund. This implies the more ease in access to Thai market for foreigners. However, in the recent years, it happens to be that the Thai Trust Fund operation fails to interest the foreign investors.

The average value of the estimated likelihood of Thai stock market integration to world capital market is 0.8498. The standard deviation of the likelihood is 0.0234. The value of the likelihood lies between 0.7652 and 0.9041.

#### 4.4. The issues on the empirical results

From the estimation, some issues about the degree of Asian stock markets integration can be drawn.

1. Singapore, the developed Asian stock markets<sup>10</sup>, show the top rank in degree of stock market integration to world capital market. It implies the least mispricing of identical risk asset

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<sup>10</sup> According to IFC categorization.



comparatively to those in world capital market. Although the Hong Kong and Singapore stock markets are interesting to investors who want to diversify their investment portfolio, there might exist less opportunity for portfolio diversification benefit to those foreign investors. Another aspect might be argued that the arbitrage opportunity might be difficult to take in those developed stock markets.

2. In term of stock market integration degree, seven Asian countries in this study could be categorized into three group, the least integrated, moderately integrated, and the highest integrated to world capital market. The average value of the degree of market integration shows that Philippines and Korea are in the group of the least integrated market. Korea is the least integrated. Malaysia and Thailand are in the second group, the moderately integrated market. The most integrated to world capital market group consists of Hong Kong, Singapore and Taiwan. Undoubtedly, those three countries are of interest to international investors.
3. During the period of economic crisis, especially from the middle of 1998 to the third quarter of 1999, foreign investors might command higher expected return to compensate the perceived higher risk in investing in the Asian countries. Some shocks in the degree of the Asian stock market integration can be detected during that period of crisis.
4. Philippines shows the most of jumps comparing to the others. Malaysia, in fact, shows the very high jumping of the degree of integration as well, but the extreme jumping of Malaysia occurred only once. The very high jumping of Philippines appeared more often and quite high comparing to the others.
5. An interesting notice from the figure 4.1., 4.2., and 4.3. is that during the period of Asian economic crisis, there is no obvious evidence that the Asian stock markets become more or less integrate to world capital market. Only Malaysia, which impose very tight control during that period in order to avoid the negative effects of foreign speculators, and Thailand showed the less degree of stock market integration.
6. In measuring the degree of Asian stock markets integration, equation 12 is the main idea to measure the deviation of the trading price from the theoretical price, given the condition that the market is integrated to world capital market. In this approach, a set of assumption about the market is needed. As we can obviously notice that this approach relies on the idea of asset valuation using CAPM, the necessary assumption is that the investors' expected return solely depends upon the covariance risk. In this case, it implies that the expected return on any local stock market depends solely on the covariance risk with the world capital market. Thus, if the market is fully integrated to world capital market, theoretically, we should observe no deviation in asset's price. The intercept in the equation 12, thus, implies the degree of market integration because it demonstrates the "mispricing" from theoretical price of the individual market.

7. While the measuring the degree of Asian stock markets integration needs the basic scenario that the market is integrated to world capital market, the measuring of the likelihood of Asian stock markets integration allows the local and global factors, which is proxied by the incorporation of the variance and covariance of the local market return and the world capital market, be the essential components in pricing model. Also, the measuring of the likelihood of stock market integration lies on the CAPM. A major different ground of the two approaches is that while the measuring of the degree of stock market integration assumes the local market to be integrated to world capital market, the measuring of the likelihood of stock market integration does not. Rather, the latter provides the measuring of "weight" of the local and global factor that affects the expected return on local stock market. Because of the nature of the "weight", the measurement of the likelihood of stock market integration has its value between 0 and 1.
8. From the estimation of the two approaches, the results do not strictly confirm the degree of integration for each stock market. However, it could not be concluded that the two approaches yield different results. Mostly, the both measures do not provide the contradict result. The measurement of the degree of stock market integration seems to be more sensitive than the measurement of the likelihood of stock market integration. The former seems to captures the "jump" or "shock" in pricing quite more frequently than the latter does. This might be the technical issues in the model setting. The measurement of likelihood of stock market integration is forced to be bound between 0 and 1, according to its definition. So far, it can not be claimed whether the measurement of the degree of stock market integration shows better performance in measuring the market integration than the measurement of the likelihood of stock market integration.
9. According to figure 4.1., 4.2., and 4.3., the Asian stock markets, the seven national markets in the observations, seems to have high degree of integration to world capital market, regarding both approaches. Although it is obviously seen that the degree and the likelihood of stock markets integration is time-varying, it shows the integration "reverting" process. In this sense, it might be argued that, in some period, the measures exhibit the deviation or jump but it will resolve to the integration level later. This might be due to the change in fundamental or just the noise.
10. The measurement concerning the degree and the likelihood of stock market integration is subjective. It implies that we can not measure directly. Both approaches are the inference based on CAPM which lies on a set of assumption plus the assumptions of each setting, itself. Thus, the obtained results are that relative results. They are not the absolute measure.