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Influence of Advanced Markets on the Malaysian Market

Othman Yong

ABSTRACT

There is a general belief among investors and speculators in Malaysia that a small and thinly traded stock market (or an emerging market), such as the Malaysian market, is highly influenced by the big and advanced markets of the US and Japan. Specifically, this paper looks at the influence of the US (NYSE) and the Japanese (TSE) markets, on the Malaysian (KLSE) market. This study uses end-of-the-week index changes (friday's and saturday's performance of the US and Japanese markets, respectively) of the advanced markets and the beginning-of-the-week (monday's performance of the Malaysian market) index changes of the emerging market for a period from January 1983 to December 1990 In general, the results indicate some validity in the claim that the advanced markets of the US and Japan do influence the Malaysian market. However, the influence is not stable over time.

ABSTRAK

Terdapat kepercayaan umum di kalangan pelabur dan pespekulasi di Malaysia bahawa pasaran kecil dan nipis (atau pasaran membangun), seperti pasaran Malaysia, amat dipengaruhi oleh pasaran besar dan maju Amerika Syarikat dan Jepun. Kertas ini melihat kepada pengaruh pasaran Amerika (NYSE) dan Jepun (TSE) terhadap pasaran Malaysia (KLSE). Kajian ini menggunakan perubahan indeks hujung minggu (prestasi hari Jumaat bagi pasaran Amerika dan prestasi hari Sabtu bagi pasaran Jepun) pasaran maju dan perubahan indeks awal minggu (prestasi hari Isnin bagi pasaran Malaysia) bagi pasaran membangun untuk tempoh dari Januari 1983 hingga Disember 1990 Secara amnya terdapat kebenaran pada pendapat yang menyatakan terdapat pengaruh pasaran Amerika dan Jepun terhadap pasaran Malaysia. Namun, pengaruh tersebut tidaklah stabil mengikut masa.

INTRODUCTION

The experience of the October 1987 Crash has made people realize that a significant event in a world's major market could have a strong influence on other markets, especially on the smaller or emerging stock markets in the Pacific-Basin. There is a general belief among investors and speculators in

Malaysia that the small and thinly traded Malaysian (KLSE) market is highly influenced by the big and advanced or developed markets of the US (NYSE) and Japan (TSE). Many of these people would look at the performance of these big markets before deciding on whether or not to enter the local market. Furthermore, if the earlier performance of a market (due to the difference in time zone) has a highly significant relationship with the current performance of another market, then this relationship can be profitably exploited. As shown by column 3 (New York time) of Table 1, Tokyo market opens two hours before the opening of the Kuala Lumpur market. The New York market opens after those Asian markets are closed, and it closes before the Asian markets open.

The central theme of this paper is not to prove that the dependence of the KLSE on the developed markets is due to the "integration" of the markets, because this will require: (1) some trading statistics among these markets; (2) the markets are open to influence among them; and (3) appropriate tests for causality, such as Granger or Sims tests. The purpose of this paper is to examine the ability of predicting the beginning-of-the-week returns on the emerging KLSE based on the end-of-the-week performance of the developed markets of Tokyo and New York. If there exists a significant relationship between the end-of-the-week performance of the developed markets (of Tokyo and New York) and the beginning-of-the-week performance of the KLSE, then this relationship can be exploited profitably In addition, the "stability" of the relationship is also important for any trading rule to succeed. So the central issues to be investigated are the relationship that might exist between developed markets and the emerging KLSE, and whether or not the relationship is stable over time.

TABLE 1. Trading hours of selected stock markets in terms of Greenwich mean time, local time and New York time

Stock Market	Greenwich Mean Time	Local Time	New York Time
New York	2:30pm - 9pm	9:30am - 4pm	9:30am - 4pm
Tokyo	Midnight - 2am/ 4am - 6am	9am - 11am/ 1pm - 3pm	7pm - 9pm/ 11pm - 1am
Kuala Lumpur	2am - 4:30am/ 6:30am - 8am	10am - 12:30pm 2:30pm - 4pm	9pm - 11.30pm/ 1.30am - 3am

Source: Directory of World Stock Exchanges

REVIEW OF PREVIOUS STUDIES

Cheung and Ho (1989) studied the causal relationship between the US market and four Asian-Pacific markets, i.e., Australia, Hong Kong, Singapore, and Malaysia. They found that a bi-directional relationship exists between the US and Australia, and between the US and Singapore. However, a uni-directional relationship running from the US market to the Hong Kong market and to the Malaysian market is found.

Fischer and Palasvirta (1990) used a spectral analysis of the price behavior of stock market indices in 23 countries to test for interdependence between the time series of stock market indices in order to support or reject the hypothesis that world markets are becoming more integrated. The results indicated that the level of interdependence (as shown by the co-movements between markets) grew substantially from 1986 to 1988 due mainly to historical trend and less related to factors associated with the October 1987 crash. The study also shows that the U.S. market seems to lead almost every other stock market in the world.

Jeon and von Furstenberg (1990) studied the interrelationships among stock prices in major world stock exchanges (Tokyo, Frankfurt, London and New York), using the vector autoregression (VAR) approach to daily stock price indices of those markets for the period of January 1986 through November 1988. The study showed an evidence of a significant structural change in terms of the correlation structure and leadership in the major world stock markets since the stock market crash of October 1987. The results indicated that during the pre-crash period, stock prices in eaach market could be explained well by their own recent history and by US stock prices, with the London market the only exception. But after the crash, stock price changes in each market except Tokyo are explained better by price changes in foreign markets than by their own price history Also, the degree of international co-movements in the stock price indices has increased significantly since the crash. The role of the immediately preceding market in the determination of stock prices was greatly enhanced after the crash. Before the crash of October 1987, the New York market evidently led world markets. The strong leadership of the US market reduced since the October crash, especially with respect to Japan. The Tokyo market has shown greater independence from other major stock markets since the October crash.

Mathur and Subrahmanyam (1990) examined the interdependencies among the stock market indices for four Nordic countries (Denmark, Finland, Norway and Sweden) and the US using the concept of Granger causality The vector autoregressive (VAR) model results indicated that the US market affected only the Danish market. The Swedish market was causally prior to both the Norwegian and Finnish markets. The Norwegian, Danish, and Finnish markets did not "Granger cause" any other market. The results also

indicate that the Nordic stock markets are less than fully integrated, where full integration refers to simultaneous adjustment to any new information coming into the market, thereby not providing opportunities for abnormal profits associated with lagged information.

On the issue of volatility spillover, Ng, Chang and Chou (1991) examined the transmission of volatility from the US market to four Pacific-Basin trading partners of the US, i.e., Japan, Korea, Taiwan, and Thailand. The study indicated that while the market fundamentals of these countries are believed to be closely related to the US market fundamentals, there was no volatility spillover from the US to Korea and Taiwan, the two markets with the most severe restriction on cross-country investing. There was also no volatility spillover from the US to Thailand before the opening of the Alien Board to facilitate the trading of Thai securities by foreign investors. The volatility spillover from the US to Japan took place mostly after US stocks were allowed to be traded on the Japanese market. The authors concluded that cross-country investing does play a very important role in the transmission of volatility between stock markets. A study by King and Wadhwani (1989) indicated that the increased volatility after the crash of October 1987 raised the covariances of returns among different stock markets. This means that higher volatility in one market may lead to the increased correlation between price movements in that market and price movements in other markets.

None of the studies cited above examined the effect of the end-of-the-week performance of major markets on the beginning-of-the-week performance of other markets. Since Malaysia is ahead of the US in terms of time, the effect of the Friday's performance of the US market is not felt in the Malaysian market until Monday. In addition, eventhough Japan and Malaysia are, more or less, in the same time zone, the effect of the Saturday's trading on the Japanese market will not be felt on the Malaysian market until Monday since there is no trading on Saturday on the Malaysian market.

DATA AND METHODOLOGY

The data base consists of friday's index changes for the US market, saturday's index changes for the Japanese market, and monday's index changes of the KLSE. The indices used in these study are the KLSE Industrials (Malaysia), Nikkei Dow Jones (Tokyo), and Dow Jones Industrial Average (New York). These indices were chosen because they are widely referred to and considered to be representative of the respective markets. The period of the study is from January 1983 to December 1990.

Friday's index changes refer to end-of-the-day Friday returns over Thursday Monday's index changes refer to end-of-the-day Monday returns over Friday Arguably, the more appropriate returns are beginning-of-the-day Monday returns over Friday However, these returns are not used

because of the unavailability of the opening Monday price data for the KLSE during the period of the study Furthermore, the effect of the end-of-the-week performance of the developed markets are arguably not supposed to be "fully" reflected "immediately" at the opening of the trading hour, on Monday, of the emerging market. With the "inefficiency" of the emerging market, it is quite safe to assume that it will take some time before the full effect can take place. The question is when *exactly* will the effect take place? By taking the end-of-the-day Monday returns over Friday, will not totally solve this problem. But, our concern is not finding the exact hour the full effect will take place. Rather, we are interested in finding out the ability of predicting the end-of-the-day Monday returns over Friday of the KLSE based on the end-of-the-week performance of the developed markets.

One can also use daily data to illustrate the relationship that might exist. But, from the practical point of view, the frequent trading will eat up any profit that can be benefitted from the relationship that might exist. So, it is quite justifiable to use the weekly data (specifically, the end-of-the-week and the beginning-of-the-week data) to illustrate the relationship between developed markets and the emerging market.

First, the mean, variance and standard deviation were computed for each market to give some preliminary measures regarding the performance and volatility of each market. In addition, the variance ratios between the developed markets and the emerging KLSE were computed. Since the mere measurement of the variance ratios are not quite adequate in describing the volatility of one market compared with another, a formal robust modified Levene test was carried out to determine the equality of variance between two markets.

The null hypothesis that two markets have the same variance was examined using the Brown-Forsythe modified Levene test statistic

$$F = \frac{[\sum_{j=1}^{c} n_j (\bar{w}_{.j} - \bar{w}_{..})^2]/[c-1]}{[\sum_{j=1}^{c}\sum_{i=1}^{n_j} (w_{ij} - \bar{w}_{.j})^2]/[n-c]}$$

where, $w_{ij} = |Y_{ij} - \hat{m}_{.j}|$ is the absolute difference between the *i*th observation in the *j*th group and the sample median of that *j*th group,

$\bar{w}_{.j} = \sum_{i=1}^{n} w_{ij}/n_j$ is the mean of the absulute differences in group j,

and $\bar{w}_{..} = \sum_{j=1}^{c} \sum_{i=1}^{n_j} w_{ij}/n$ is the overall mean common to all the absolute differences.

The F-statistic above is distributed $F_{c-1,n-c}$ under the null hypothesis.

The standard F-test for variance equality is not robust to departures from normality in the data (Layard 1973). Conover et al. (1981) evaluated more than 50 procedures for testing the homogeneity of variance hypothesis and concluded that a Brown-Forsythe (1974) modification of the Levene test (1960) is among the most powerful and robust with respect to violations in the assumption of normality. Their modification involves the use of the sample median M_j to obtain the absolute differences w_{ij} in lieu of the sample mean $Y_{.j}$ as initially described by Levene.

Next, a regression analysis was performed to determine whether there is a significant linear relationship between the index changes of the KLSE (the dependent variable) and that of the US market and also Japanese market. The Durbin-Watson test was conducted to detect any autocorrelation in the data.

The correlation coefficients between developed markets and the KLSE for each period were computed. One word of caution is warranted here. As pointed out by Jeon and Furstenberg (1990), it is not easy to tell whether strong positive correlations imply that markets are integrated across countries or rather that markets are segmented and responding to common international shocks. In addition, correlation coefficients do not provide information on causal relationships between variables in the model. It will be more appropriate to study what effects a shock or innovation in one market will have on others and what the strength and persistence of those effects will be.

The null hypothesis that the correlations are equal between two sub-periods was tested using the Z-statistic (Maldonado & Saunders 1981)

$$Z_{ij} = [X_{ij}(1) - X_{ij}(2)]/\{[1/(N_1 - 3) + 1/(N_2 - 3)]\}^{1/2}$$

where, $X_{ij}(k) = \ln \{\{[1 + r_{ij}(k)]/[1 - r_{ij}(k)]\}^{1/2}\}$, which is a Fisher transformation of the correlation coefficients in sub-period k,

$r_{ij}(k)$ = correlation coefficient of market i and market j for sub-period k,

and N_k = number of observations in sub-period k.

Since correlation does not tell the whole story about causal relationship, a causality test was conducted. In testing the causality between two variables X and Y, a one-way Granger causality test as suggested by Geweke (1984)

was used. The test uses the ordinary least squares regression (OLS) with the following specification:

$$Y_{t} = \alpha_0 + \sum_{i=1}^{M} \alpha_i Y_{t-i} + \varepsilon_t \quad (1)$$

$$Y_t = \beta_0 + \sum_{i=1}^{M} \beta_i Y_{t-i} + \sum_{j=1}^{M} \beta_j X_{t-j} + \mu_t \quad (2)$$

ε_t and μ_t are the error terms, α_i and β_i are parameters relating Y_t and its lagged values, and β_j are parameters relating X_t and its lagged variables. As a rule of thumb applied in most causality studies, four lags are used in this study It should be noted here that the causality test suggested by Sims (1972) employed 8 past lags and 4 future lags. But, in an efficient market, it is quite ridiculous to imagine that there exist correlations beyond lag 1 or lag 2. A null hypothesis that X does not cause Y based on equations (1) and (2) is tested using the F-statistic estimated as:

$$\frac{[(SSE_1 - SSE_2)/N]}{[SSE_2/(T-M-N-1)]}$$

SSE_1 and SSE_2 are the sum of squared errors from the OLS regression on equations (1) and (2), respectively T is the number of time series observations on Y_t. F-statistic is distributed with (N, T-M-N-1) degrees of freedom. M and N are the number of lags in the X and Y variables, respectively.

FINDINGS

The volatility, as measured by the standard deviation, and the mean of index changes of each market are shown in Table 2. For the Malaysian market, negative mean return can be seen in almost all years, which means that the average return on Monday is negative. The same can also be said with the entire period of 1983-1990. On the other hand, the US market showed positive mean return for almost all periods, which means that the average return on Friday is positive. These results are quite consistent with the results of the day-of-the-week or weekend effect studies on the Malaysian or the US markets (e.g., French (1980) on the US market, and Annuar and Shamsher (1987) on the Malaysian market). In the case of the Japanese market, the signs of the mean return are mixed. The standard deviations of the Malaysian market are relatively larger than those of the US market. The Japanese market exhibited a wide fluctuation in its standard deviations.

TABLE 2. Standard deviation and mean, according to period

Period	United States		Japan		Malaysia	
	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean
1983	.8480	.0803	1.1912	.3990	1.2616	-.0641
1984	1.0995	.0313	12.5905	-1.4411	1.0052	-.1166
1985	.6217	.1535	.6528	.0507	1.8345	-.3228
1986	.8902	.0698	1.0329	.2203	1.5083	-.0737
1987	1.3153	-.1126	12.4762	-1.7270	2.8076	-.2386
1988	1.4464	.0651	.6360	.1583	1.3765	-.0013
1989	1.3424	.1061	4428	.0447	1.6208	-.0021
1990	1.1714	.0321	1.7493	-.1810	1.9423	.0837
1983-90	1.1161	.0328	6.3605	-.3134	1.7375	-.0933

TABLE 3. Results of the Brown-Forsythe modified Levene test (F-stat) for equality of variances and the ratio of variances between the Malaysian market and the U.S. and Japanese markets

Period	Malaysia versus United States			Malaysia versus Japan		
	Var. ratio	F-stat	P-value	Var. ratio	F-stat	P-value
1983	2.21	.02345	.8789	1.12	.63260	4302
1984	.84	.36617	.5478	.01	.21889	.6419
1985	8.71	1.39124	.2438	7.90	.04556	.8319
1986	2.87	.33228	.5670	2.13	.11887	.7317
1987	4.56	7.25347**	.0096	.05	4.72255*	.0345
1988	.91	30.61002**	.0000	4.68	13.72561**	.0005
1989	1.46	47.36897**	.0000	13.40	6.83760*	.0118
1990	2.75	2.53905	.1176	1.23	9.28165**	.0038
1983-90	2.42	44.19870**	.0000	0.07	9.38318**	.0023

Notes: 1) * Significant at the 5 percent level.
2) ** Significant at the 1 percent level.

The variance ratios between Malaysia and the US and also between Malaysia and Japan are shown in Table 3. In addition, the results of the robust Brown-Forsythe modified Levene test for equality of variance are presented. As can be seen, except for years 1984 and 1988, the variance ratios between Malaysia and the US are substantially greater than 1. This implies that the returns on the Malaysian market are more volatile compared to the returns

on the US market. However, the Levene test detected significant inequality in variance only in years 1987, 1988, and 1989 and also for the entire period of 1983-1990. In the case of variance ratios between Malaysia and Japan, the values are substantially greater than 1 except for years 1984 and 1987, and also for the entire period 1983-1990, where the variances of the Japanese market are tremendously larger than those of the Malaysian market. Overall, the Levene test detected significant inequality in variance between the Malaysian and the Japanese markets only after 1986.

Table 4 shows the results of the regression analysis on the end-of-the-week performance of developed markets and the beginning-of-the-week performance of the Malaysian (KLSE) market, with KLSE as the dependent variable. Significant linear relationship between the US (NYSE) market and the KLSE can be seen in 1984, 1987, 1988, 1989, 1990 and for the entire period 1983-1990, as indicated by the relatively high R^2 values and significant beta values for these periods. The high values of R^2 were recorded in 1988, 1989 and 1990, with the highest value of 0.4707 was recorded in 1989 The R^2 value of 0.4707 indicates that about 47 percent of the variation or volatility in the KLSE is explained by the volatility in the NYSE. The relationships between the Japanese market (TSE) and KLSE, are less significant compared to the relationships between NYSE and KLSE, as indicated by the relatively lower R^2 values and relatively less significant beta values. It is interesting to note that at the 1 percent level, none of the Durbin-Watson statistics indicate significant autocorrelation in the residuals.

The results of the regression analysis somewhat reinforce the belief that there is a relationship between the end-of-the-week performance of the NYSE, and to the lesser degree the TSE, and the beginning-of-the-week performance of the KLSE. In the case of the relationship between NYSE and KLSE, the relationship was more significant after 1986. In the case of the TSE and KLSE, the relationship was not quite consistent from year to year.

Table 5 shows the correlation coefficients between the beginning-of-the-week performance of the KLSE and the end-of-the-week performances of the NYSE and also the TSE. With the exception of years 1983, 1985 and 1986, the correlation coefficients between NYSE and KLSE were highly significant. The highest correlation was 0.6861, in year 1989. The correlations between KLSE and TSE were significant in years 1983, 1985, 1987, 1988, 1990, and for the entire period 1983-1990. The correlations between KLSE and NYSE were very significant after 1986, but not equally significant between KLSE and TSE.

Table 6 shows the Z-values for significant difference of the correlation coefficients among sub-periods between the KLSE and also HKSE and the NYSE and the TSE. In general, the correlation coefficients between sub-periods were significantly different at the 5 percent level. In fact, the high Z-values also indicate that the differences are significant at the 1 percent level. These results indicate that, overall, the correlation coefficients are not quite stable from one sub-period to another.

TABLE 4. Results of the regression analysis on the relationship between the Malaysian market and the US and Japanese markets

Period	Alpha	Beta	Std. Error of Beta	R^2	Durbin-Watson
U.S. market and Malaysian market (dependent variable)					
1983	-.0473	.2094	.2083	.0198	1.51209
		(.3197)			
1984	-.1291	4000**	.1163	.1914	2.24755
		(.0012)			
1985	- 4198	.6321	4076	.0459	2.00736
		(.1273)			
1986	-.0715	-.0323	.2420	.0004	1.56761
		(.8944)			
1987	-.1608	.6911*	.2856	.1048	1.34910
		(.0192)			
1988	-.0366	.5411**	.1118	.3233	2.41540
		(.0000)			
1989	-.0900	.8283**	.1255	4707	2.25856
		(.0000)			
1990	.0530	.9577**	.1954	.3336	1.92813
		(.0000)			
1983-90	-.1125	.5876**	.0713	.1425	1.77971
		(.0000)			
Japanese market and Malaysian market (dependent variable)					
1983	-.1803	.2912*	.1440	.0756	1.64802
		(.0485)			
1984	-.0978	.0130	.1111	.0266	2.17331
		(.2482)			
1985	-.3621	.7762*	.3820	.0763	1.91688
		(.0475)			
1986	-.0387	-.1592	.2074	.0119	1.61589
		(.4464)			
1987	-.1187	.0694*	.0303	.0952	1.51058
		(.0260)			
1988	-.1613	1.0106**	.2734	.2180	2.18437
		(.0006)			
1989	.0023	-.0983	.5227	.0007	2.49137
		(.8516)			
1990	.1504	.3685*	.1512	.1102	1.86349
		(.0185)			
1983-90	-.0786	.0467**	.0133	.0293	1.81628
		(.0005)			

Notes: 1) P-values are shown in the parentheses.
2) * Significant at the 5 percent level.
3) ** Significant at the 1 percent level.

TABLE 5. Correlation coefficients between the beginning-of-the-week performance of the Malaysian market and the end-of-the-week performances of the U.S and Japanese markets, according to period

Period	Malaysia and U.S.	Malaysia and Japan
1983	0.1407	0.2750*
1984	0.4375**	0.1630
1985	0.2142	0.2762*
1986	-0.0190	-0.1090
1987	0.3237*	0.3086*
1988	0.5686**	0.4669**
1989	0.6861**	-0.0269
1990	0.5776**	0.3319*
1983-1990	0.3775**	0.1711**

Notes: * Significant at the 5 percent level.
** Significant at the 1 percent level.

TABLE 6. Calculated Z statistics for significant difference of the correlation coefficients among sub-periods between the Malaysian market and the U.S. and the Japanese markets

	1984	1985	1986	1987	1988	1989	1990	1983-90
U.S. (friday's performance) and Malaysia (monday's performance)								
1983	-8.02**	-1.86	3.90**	-4.76**	-12.22**	-16.95**	-12.41**	-11.18**
1984		6.16	11.84**	3.27**	-4.28**	-9.01**	-4.55**	3.15**
1985			5.74**	-2.90**	-10.38**	-15.11**	-10.59**	-7.86**
1986				-8.60**	-15.95**	-20.63**	-16.10**	-17.87**
1987					-7.51**	-12.24**	-7.75**	-2.68**
1988						-4.68**	-0.32	10.66**
1989							4.31**	19.04**
1990								11.03**
Japan (Saturday's performance) and Malaysia (monday's performance)								
1983	2.89**	-0.03	9.50**	-0.90	-5.43**	7.50**	-1.50	4.79**
1984		-2.92**	6.64**	-3.79**	-8.28**	4.64**	-4.33**	-0.36
1985			9.53**	-0.87	-5.40**	7.53**	-1.47	4.85**
1986				-10.39**	-14.77**	-1.98*	-10.79**	-12.12**
1987					-4.54**	8.39**	-0.62	6.40**
1988						12.79**	3.83**	14.31**
1989							-8.83**	-8.58**
1990								7.26**

Notes: * Significant at the 5 percent level.
** Significant at the 1 percent level.

Table 7 shows the results of the Granger test for causality. For the entire period 1983-1990, the NYSE seems to influence the KLSE, but not vice-versa. Looking closer at the results for the sub-periods, the US influence on the Malaysian market was quite significant in years 1984 and 1987, and highly significant in years 1989 and 1990. The Japanese market influence on the Malaysian market was significant in 1988, and quite significant for the entire period 1983-1990. For other sub-periods, the influence was not that significant. Interestingly, the results do indicate high influence of KLSE on the Japanese market, especially for years 1983, 1987 and for the entire period 1983-1990. It is not that easy to explain this phenomenon because studies such as Jeon and von Furstenberg (1990) did indicate greater independence of Tokyo market from other stock markets, especially since the crash of October 1987 However, one should not forget that Malaysia is a country where many big Japanese companies are doing business, and many of these companies are listed on the KLSE. Therefore, it is not that strange that events in Malaysia do effect the performance in the Tokyo market.

TABLE 7 Results of the Granger causality test (F-statistic) between markets

Direction	1983	1984	1985	1986	1987	1988	1989	1990	1983-90
NYSE to KLSE	1.85	3.64*	0.50	1.27	3.40*	1.59	12.68**	5.17**	17.17**
KLSE to NYSE	2.16	1.41	1.20	0.36	1.05	0.78	0.24	1.90	0.63
TSE to KLSE	2.14	1.64	1.66	0.24	0.97	4.18**	0.32	1.76	2.46*
KLSE to TSE	4.17**	0.34	0.57	1.34	11.83**	0.46	0.87	1.20	8.01**

Notes: * Significant at the 5 percent level.
** Significant at the 1 percent level.

CONCLUSION AND IMPLICATION

For the Malaysian market, almost all years showed negative mean return, which means that the average return on Monday is negative. On the other hand, the US market showed positive mean return for almost all periods, which means the average return on Friday is positive. These results are quite consistent with the results of the day-of-the-week or weekend effect studies on the Malaysian or the US markets. In the case of the Japanese market, the signs of the mean return are mixed. The standard deviations of the Malaysian

market are relatively larger than those of the US market. The Japanese market exhibited a wide fluctuation in its standard deviations.

The variance ratios between Malaysia and the US are substantially greater than 1. This implies that the returns on the Malaysian market are more volatile compared to the returns on the US market. However, the Levene test detected significant inequality in variance only in 3 out of 8 years, and also for the entire period 1983-1990. In the case of variance ratios between Malaysia and Japan, the values are substantially greater than 1 except for 2 out of 8 years, and also for the entire period 1983-1990. Overall, the Levene test detected significant inequality in variance between the Malaysian and the Japanese markets only after 1986. This inequality in variance implies that these markets are not always in tandem in terms of their volatility In other words, a significant change or event in the advanced market will not necessarily or always be reflected in the smaller market.

The results of the regression analysis, with Malaysia as the dependent variable, show some significant relationship between NYSE and KLSE. As shown by the Granger causality test, the uni-lateral influence of the NYSE on the KLSE was quite significant, especially since 1987.

The relationship between TSE and KLSE was relatively less significant compared to the relationship between NYSE and KLSE. However, the results of the Granger causality test show some bi-lateral causal relationships between TSE and KLSE, with KLSE exerted more influence on the TSE for some years.

The results of the regression analysis and Granger causality test somewhat reinforce the belief that the end-of-the-week performances of the US market, and to the lesser degree the Japanese market, do influence the beginning-of-the-week performance of the Malaysian market. In the case of the US market, the influence was more pronounced after 1986. In the case of the Japanese market, the influence was not quite consistent from year to year. These results do indicate some validity in the claim that the performance of a major market does influence the performance of a smaller and emerging market. However, the degrees of influence are not quite stable from one sub-period to another.

We show from the results of all the tests performed, that indeed the issue of causal relationship between developed markets and emerging market, is still quite far from being fully resolved. The idea of predicting what will happen next in an emerging market based on what had happened in the developed markets does not seem to be totally acceptable due to changing or inconsistent relationship between these markets. The inconsistent correlations found in this study can at least substantiates those studies on international diversification, such as that of Maldonado and Saunders (1981), which question the validity of the potential gain hypothesis of the international diversification.

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Jabatan Kewangan
Fakulti Pengurusan Perniagaan
Universiti Kebangsaan Malaysia
43600 Bangi, Selangor