

CHAPTER 4

RESEARCH RESULTS

This chapter documents the empirical results and discusses all the findings of this study based on the selected sample firms. First of all, the results will be presented using a summary table of statistics to show the detailed analysis. The analysis covers the model regression results interpretation and the testing of the hypotheses. Finally, the overall results summary is presented at the end of this chapter.

4.1 Unit Root Test Result

Similar to previous studies, the results find that the variables' data series have a unit root at the raw data level, but are stationary at the first difference ($I(1)$). The summary of the Augmented Dickey-Fuller (ADF) and (Phillips-Perron) PP unit root test results are presented in Table 4.1.1 below. The ADF and PP test statistics are able to reject the null hypothesis at the 1%, 5% and 10% significance level for all series in the first-difference form based on the EViews analysis. A few examples of the results, which are arranged by variables, are included in Appendix B. The favorable results allow this study to proceed with the OLS tests.

Table 4.1.1
Panel Unit Root Test Result (H0: unit root, HA: no unit root)

Variables	Result	
	Augmented Dickey-Fuller test	Phillips-Perron test
Stock Return Eighty samples firms' stock return	I(1) except two firms	I(1)
Exchange Rate Changes U.S. dollar	I(1)	I(1)
EURO dollar	I(1)	I(1)
Japanese Yen	I(1)	I(1)
Market Return KLSE index	I(1)	I(1)

4.2 Summary of Data

In order to simplify the data analysis and for a better structural analysis, the 80 sample firms are summarized and categorized based on common attributes. After evaluating the selected firms, stock return of the sample firms are classified into two sectors: tradable and non-tradable, based on the nature or industry of the firms. This is supported by the assumption and criteria established by Barja et al. (2003). The basic assumption made was that tradable firms are generally more involved in international trade compared to non-tradable firms, which are mostly represented by the service industry.

The summary of the grouping is shown in Table 4.2.1 below. It is derived from the identification results for every individual firm listed in Appendix A. Such classification is expected to enhance the justification of the findings and implications of this study.

Table 4.2.1
Classification of Sample Firms into Sectors

Sectors	Number of firms
Tradable	42
Non-tradable	38

4.3 Regression Analysis Results

4.3.1 The Magnitude and Direction of Exposure

Based on the specified model and detailed explanation provided in Chapter 3, the regression results for the 80 sample firms is generated using the EViews while incorporating the lag and different time horizons. Appendix C presents the regression results of two firm samples, one tradable and the other non-tradable, namely Lafarge and TheStar. These firms are chosen to explain the magnitude and direction of exposure. To analyze the regression, this study summarized the results in a tabular form for convenience and comparison purposes. Table 4.3.1 and 4.3.2 below summarizes all the estimates for α , β , γ and δ coefficients for a full period and sub-period. The γ and δ coefficients represent the determinants of exposure, which is the main subject of this study.

The table summary below explains the changes in coefficients γ_i and δ_i when the stock return is regressed against different currencies that have a different time lag effect. For the tradable firm, the coefficient, γ_i of -0.265 denotes that a percentage change of U.S. dollar has decreased the stock return by 0.26%. This means that the depreciation of Ringgit Malaysia eventually reduces the firm's stock return or value. Similarly for Japanese Yen, an increase of a

percentage of yen reduces 0.11% stock return. Meanwhile, the EURO dollar shows a favourable impact – a 0.044% increase in stock return when the EURO dollar appreciates. However, the results do not provide strong evidence that the exchange rate movement has a contemporaneous significant exposure effect on a firm's stock return.

Table 4.3.1
Summary of Regression Result of Two Sample Firms for Full Period
 $R_{it} = \alpha_i + \beta_m R_{mt} + \gamma_i \Delta X_t + \sum \delta_i \Delta X_{t-k} + e_t$

TRADABLE FIRM	July 2005 to June 2009							
	α_i	β_m	γ_i	δ_{i-1}	δ_{i-2}	δ_{i-3}	δ_{i-4}	δ_{i-5}
U.S. dollar	0.000733 (0.00078)	1.45148 (0.087411)	-0.264588 (0.256478)	-0.22905 (0.237728)	-0.287732 (0.23759)	-0.193923 (0.237615)	0.089473 (0.238022)	-0.064908 (0.238784)
Japanese Yen	0.000829 (0.000778)	1.440971 (0.090136)	-0.11485 (0.108688)	-0.150229 (0.097714)	0.024637 (0.09826)	-0.227543** (0.098021)	0.07296 (0.097881)	0.047241 (0.097766)
EURO dollar	0.000755 (0.000777)	1.47885 (0.081116)	0.044365 (0.132269)	-0.105438 (0.132478)	0.319171** (0.133438)	-0.129738 (0.133224)	0.083847 (0.132636)	0.293323** (0.132499)

NON-TRADABLE FIRM	July 2005 to June 2009							
	α_i	β_m	γ_i	δ_{i-1}	δ_{i-2}	δ_{i-3}	δ_{i-4}	δ_{i-5}
U.S. dollar	-0.000234 (0.000357)	0.403756 (0.039976)	-0.16077 (0.117298)	0.10228 (0.108723)	-0.198998 (0.108659)	-0.310219* (0.108671)	0.075389 (0.108857)	0.090244 (0.109205)
Japanese Yen	-0.000209 (0.000358)	0.405657 (0.041456)	-0.038433 (0.049989)	0.09828** (0.044942)	-0.040992 (0.045193)	-0.033019 (0.045083)	-0.015558 (0.045019)	0.059103 (0.044966)
EURO dollar	-0.000206 (0.000358)	0.418615 (0.03737)	-0.047609 (0.060936)	-0.001577 (0.061033)	-0.019833 (0.061475)	0.148515** (0.061376)	-0.057872 (0.061105)	-0.037384 (0.061042)

- Notes: a) Observations are taken daily from July 2005 to June 2009.
b) The stock return of the firm is regressed against the U.S. dollar, Japanese Yen and EURO dollar individually with market return as the control variables on 5 days lag.
c) *, **, represent statistically significant at 1% and 5% levels respectively.
d) The standard error is denoted in the bracket form.

However, when the stock return is regressed at time lag, the foreign exchange exposure shows some significant effect on the return especially on the two-, three- and five-day lag. The lag effect implies that the changes of the exchange rate one, two or more days prior to the current day have an impact on today's stock return changes. At lag two and lag five, the stock return is significantly exposed to the Euro dollar where a percentage change in the exchange rate increased the stock return by 0.32% and 0.29% respectively.

Then at lag three, the Japanese Yen, which has a significant negative sign coefficient, indicates a downside in stock return of 0.23%.

Similarly, for non-tradable firms, there is no significant foreign exchange exposure at the contemporary level, and the negative sign of the coefficient estimate denotes that the appreciation of all the relevant currencies decreases stock return by 0.16% (U.S. dollar), 0.04% (Japanese Yen) and 0.05% (EURO dollar). Apart from that, the results show that the U.S. dollar has the highest magnitude among the three currencies, which means that the firm's return is mainly affected by the changes of the U.S. dollar. The Japanese Yen's changes have significantly influenced stock return with a 0.10% upside at the one day lag. Meanwhile, the U.S. dollar and EURO dollar have significant impact on stock return when a three-day lag is used even though the sign of exposure is different. The foreign exchange exposure coefficient is observed at -0.31 for the U.S. dollar and 0.15 for the EURO dollar.

Overall, the results are not strongly evidence that both firms are exposed to the foreign exchange rate risk during the period. The size of the exposure averaged less than 0.35% for individual currencies, which means that the fluctuation of the exchange rate do not seem to have a heavy impact on stock price changes. There is no significant exposure at lag four, which means the movement of foreign exchange rate four days before do not impact the current stock return. Moreover, the sign of exposure is not consistent across the time lag and exchange rate. The exposure coefficient of the U.S. dollar for tradable

firms start from lag zero to three indicates a negative sign but changes into a positive sign at lag four and subsequently resumes to a negative sign at lag five.

Meanwhile, for non-tradable firms, the coefficient exposures are positive for the U.S. dollar and Japanese Yen, but negative for the EURO dollar for the same lag – particularly at one day lag. The negative sign implies that the depreciation of Ringgit Malaysia lessens the firm's value and in contrast, the positive sign denotes an increase in the firm's value. Based on the average of coefficient, the size of exposure of a tradable firm is greater than a non-tradable firm. Nevertheless, stock return definitely has a significant correlation with market return where beta for both tradable and non-tradable firms shows an average of 1.4 and 0.4 respectively.

Table 4.3.2 shows the coefficient exposure of two sub-periods for the two samples of tradable and non-tradable firms. The results show a comparison of the foreign exchange exposure: whether there is any difference or consistency in the coefficient across the two sub-periods. In reference to tradable firms, the exchange rate exposure shows a negative for both sub-periods for the U.S. dollar on the same day. On the other hand, the Japanese Yen and EURO dollar coefficients change from positive to negative during the post-crisis period. This suggests that at zero lag before the crisis, firms experienced a positive impact on stock return due to the changes in the Japanese and EURO dollar exchange rate but faced a devaluation of stock return during the crisis. Stock return increased 0.17% before the crisis but

dropped 0.23% post-crisis, which resulted from an appreciation of the Japanese yen exchange rate. Similarly, a 1% increase in EURO dollar increased stock return by 0.21%. Subsequently during the crisis, stock return declined 0.02%, which demonstrates a lesser impact compared to the Japanese Yen.

The effect on foreign exchange exposure of non-tradable firms is concurrently consistent across the sub-periods except for the Japanese Yen exposure where the coefficient changes from positive 0.014 to negative 0.06. This result shows that non-tradable firms faced a decrease in stock return too when the crisis hit. The U.S. dollar exposure seemed smaller during the crisis and is represented by -0.152 compared to the pre-crisis exposure of -0.297. However, the EURO dollar exposure is a contrast because the size of exposure during the crisis is higher than before the crisis as observed, which seems logical. That said, the foreign exchange exposure does not contemporarily have a significant impact on the stock return of both tradable and non-tradable firms but with lag, it appears that there is a significant relationship between stock return and exchange rate changes – especially when one, two or three days lag are used.

Using a three-day lag, the stock return of the non-tradable firm is significantly affected by the U.S. dollar and EURO dollar during the crisis. It shows a -0.39 and 0.19 coefficient respectively. Nonetheless during the pre-crisis, the stock return is obviously not significantly exposed to all of the currencies at lag three. Meanwhile at lag two, during the pre-crisis period, the tradable firm is

significantly exposed to the foreign exchange risk where a 1% appreciation of the Japanese Yen results in firm value decline of 0.54%. This indicates that the firm is suffering from the appreciation. However, the Japanese Yen exchange rate does not reveal any significant impact post-crisis but the tradable firm shows a likelihood of gaining from the EURO dollar's appreciation, especially from the two- and five-day lag effect that is denoted by a 0.61 and 0.37 coefficient respectively. The tradable firm is not significantly exposed to the U.S. dollar for all lags.

Overall, these two sample firm stock return is not strongly affected by the exchange rate movement during the two sub-periods. However, the magnitude and direction of the foreign exchange exposure change in time and depends on the lag period, which signifies that a time varying effect exists.

Table 4.3.2
Summary of Regression Result of Two Sample Firms for the Two Sub-periods
 $R_{it} = \alpha_i + \beta_m R_{mt} + \gamma_i \Delta X_t + \sum \delta_i \Delta X_{t-k} + e_t$

TRADABLE FIRM	July 2005 to June 2007								July 2007 to June 2009							
	α_i	β_m	γ_i	δ_{i_1}	δ_{i_2}	δ_{i_3}	δ_{i_4}	δ_{i_5}	α_i	β_m	γ_i	δ_{i_1}	δ_{i_2}	δ_{i_3}	δ_{i_4}	δ_{i_5}
U.S. dollar	0.000195 (0.001064)	1.851846 (0.166296)	-0.432891 (0.547307)	-0.263455 (0.529436)	-0.725014 (0.530969)	-0.403763 (0.538069)	-0.22106 (0.539902)	-0.307881 (0.540525)	0.00064 (0.00116)	1.32288 (0.106559)	-0.28273 (0.303064)	-0.187423 (0.277153)	-0.15879 (0.276758)	-0.113159 (0.276023)	0.146762 (0.276704)	-0.045188 (0.278286)
Japanese Yen	0.000366 (0.001057)	1.939887 (0.163792)	0.169992 (0.22672)	-0.149339 (0.219761)	-0.544168** (0.21959)	-0.267896 (0.220581)	0.082775 (0.221145)	0.185251 (0.22035)	0.000784 (0.001161)	1.265824 (0.110896)	-0.232549 (0.129359)	-0.142859 (0.113404)	0.12838 (0.114328)	-0.210807 (0.113742)	0.065715 (0.113497)	0.023233 (0.113319)
EURO dollar	0.000595 (0.001044)	1.939569 (0.158943)	0.215399 (0.2342)	-0.141006 (0.234469)	-0.42701 (0.237794)	-0.215186 (0.237484)	-0.219262 (0.234962)	0.103851 (0.233152)	0.000505 (0.00114)	1.33573 (0.096602)	-0.028417 (0.16266)	-0.069782 (0.162986)	0.614423* (0.163716)	-0.074647 (0.163446)	0.201573 (0.163029)	0.37102** (0.16325)

NON- TRADABLE FIRM	July 2005 to June 2007								July 2007 to June 2009							
	α_i	β_m	γ_i	δ_{i_1}	δ_{i_2}	δ_{i_3}	δ_{i_4}	δ_{i_5}	α_i	β_m	γ_i	δ_{i_1}	δ_{i_2}	δ_{i_3}	δ_{i_4}	δ_{i_5}
U.S. dollar	-0.000507 (0.000435)	0.5056 (0.067993)	-0.297277 (0.223776)	-0.240836 (0.216469)	-0.199213 (0.217096)	0.082368 (0.219999)	0.409144 (0.220748)	-0.02634 (0.221002)	-0.0000315 (0.00057)	0.372199 (0.052394)	-0.151997 (0.149012)	0.177847 (0.136272)	-0.199597 (0.136077)	-0.392549* (0.135716)	-0.002984 (0.136051)	0.09579 (0.136829)
Japanese Yen	-0.000449 (0.000434)	0.546067 (0.067301)	0.014282 (0.093157)	-0.0000774 (0.090298)	-0.19655** (0.090228)	0.080328 (0.090634)	0.093699 (0.090866)	0.103845 (0.09054)	-0.0000436 (0.000578)	0.357913 (0.055242)	-0.064219 (0.064439)	0.118491** (0.056492)	-0.015457 (0.056952)	-0.058741 (0.05666)	-0.043738 (0.056538)	0.044928 (0.056449)
EURO dollar	-0.000479 (0.00043)	0.545474 (0.065407)	-0.011205 (0.096376)	-0.02351 (0.096486)	-0.161777 (0.097855)	0.043215 (0.097727)	-0.035384 (0.096689)	-0.026783 (0.095944)	-0.0000467 (0.000574)	0.38076 (0.048611)	-0.060985 (0.081851)	0.010506 (0.082016)	0.039271 (0.082383)	0.194116** (0.082247)	-0.066345 (0.082037)	-0.045264 (0.082149)

- Notes: a) The daily observations are distributed to two sub-periods from July 2005 to June 2007 and from July 2007 to June 2009.
b) The stock return of the firm is regressed against the U.S. dollar, Japanese Yen and EURO dollar individually with market return as the control variables on 5 days lag.
c) *, **, represent statistically significant at 1% and 5% levels respectively.
d) Standard error is denoted in the bracket form.

4.4 Testing of hypotheses

4.4.1 The Relationship between Stock Return and Foreign Exchange Rate Changes

The overview and analysis of the magnitude and size of exposure for the two sample firms basically provide an understanding of the extent and how the foreign exchange movement actually affects the stock return of a firm. Nevertheless, to test the first hypothesis in relation to the significance of the foreign exchange exposure, the OLS regression is performed on all 80 sample firms that represent the population of Malaysian firms. Since the main objective is to focus on the significance of the exposure, therefore the coefficient estimates generated by EViews are prioritized, identified and summarized as shown in Appendix D (Tradable Firms) and Appendix G (Non-tradable Firms).

After that, the firms with stock return that is significantly exposed to the foreign exchange rate changes are identified by reviewing the coefficient exposure that is significant at the 1% and 5% levels. The number of firms categorized into tradable and non-tradable with significant coefficient exposure at 1% and 5% significant level are counted and presented under Table 4.4.1. The exposure period covers July 2005 to June 2009. Based on an overall observation, the number of tradable firms exposed to the foreign exchange risk is higher than non-tradable firms at all lags or for the respective currencies exchange rate. For example, the U.S. dollar exposure, the total

number of tradable firms is higher than non-tradable firms for almost every lag except lag one where the total numbers are equal.

Table 4.4.1
Foreign Exchange Exposure of Tradable and Non-Tradable Firms with Lag for the Period from July 2005 to June 2009
 $R_{it} = \alpha_i + \beta_m R_{mt} + \gamma_i \Delta X_t + \sum \delta_{ik} \Delta X_{t-k} + e_t$

SAMPLE FIRMS	Number of firms								
	U.S. Dollar			Japanese yen			EURO dollar		
	Total	+ve	-ve	Total	+ve	-ve	Total	+ve	-ve
Lag =0									
Tradable	7	1	6	1	1	0	5	5	0
Non-Tradable	3	1	2	1	0	1	5	1	4
Lag =1									
Tradable	5	2	3	3	0	3	5	1	4
Non-Tradable	5	2	3	5	2	3	3	2	1
Lag = 2									
Tradable	3	1	2	3	1	2	9	8	1
Non-Tradable	0	0	0	3	3	0	3	3	0
Lag = 3									
Tradable	6	1	5	5	0	5	0	0	0
Non-Tradable	4	0	4	1	0	1	2	1	1
Lag = 4									
Tradable	5	2	3	3	0	3	3	2	1
Non-Tradable	3	1	2	2	1	1	0	0	0
Lag = 5									
Tradable	1	0	1	2	1	1	2	1	1
Non-Tradable	0	0	0	2	1	1	4	2	2

Notes:

- Stock return of the eighty sample firms are regressed against the U.S. dollar, Japanese Yen and EURO dollar individually with market return as the control variables on 5 days lag.
- Firms with significant coefficients exposure are determined and summarised by indicating the number of firms in total and breakdown based on the sign of the coefficients for every currencies. +ve represents positive coefficients and -ve represents the negative coefficients.
- The statistically significant level used are at 1% and 5%.

As seen in the table above, at lag zero, the number of firms that have a significant coefficient exposure against the U.S. dollar and EURO dollar are the same (10 firms) while for the Japanese Yen, there are only two firms that are significantly exposed. Among the 10 firms, a maximum of 8 firms have a negative exposure toward the U.S. dollar while 6 firms are positively affected by exchange rate changes in the EURO dollar. This shows that stock return

largely decreases when the U.S. dollar appreciates but increases when the EURO dollar appreciates. Similar results are found on lagged effect exposure in the U.S. dollar where the total number of firms with a negative coefficient is larger than positive.

As the EURO dollar lag increases, especially from lag three onwards, the total firms exposed to the foreign exchange rate movement decreases from an average of 10 to 12 firms, to a lesser number of 2 firms, which indicates that the change in foreign exchange two days or more before does not significantly affect the current stock return. Between lag zero to lag two, the frequency of the coefficient is likely to fluctuate because the 6 firms with a positive – at lag zero – decreases to 3 firms at lag two. This subsequently increases to 11 firms at lag three. Thus, the study argues that the direction of exposure tends to change in accordance to the lagged days.

The table shows that most firms are negatively affected by the Japanese yen exchange rate movement with a maximum of 6 firms affected when lag one and three are used. Similarly for the U.S. dollar, the number of firms with a negative coefficient is higher than those with a positive coefficient for all lags regardless whether they are tradable or non-tradable firms. These results imply that large Malaysian firms face a higher risk in their stock return when the U.S. dollar and Japanese Yen appreciate, but enjoy the advantage of the EURO dollar appreciation. This is proven by the higher number of positive coefficients.

Furthermore, the number of firms with significant coefficient exposure is relatively low. That's because based on the 80 sample firms, the average percentage of firms that are significantly exposed to foreign exchange volatility is not more than 15%. This shows that most listed large firms in Malaysia are not significantly exposed to the foreign exchange risk. The result is consistent with past empirical studies (for example, Senteney, Bazaz and Peyvandi, 2003; Guo, Neely and Higbee, 2007) that found no strong evidence to support the exposure between the stock return and foreign exchange changes after incorporating the lag effect and various currencies.

In addition, this finding is similar to the Parsley and Popper (2003) findings where the number of firms significantly exposed to foreign exchange risk is higher if the U.S. dollar is frequently used in business transactions compared to the EURO dollar and Japanese Yen. In addition, the unexpected movement in the U.S. dollar and Japanese Yen exchange rate negatively affects the firm's stock performance. However, there are firms that appear to gain from the EURO dollar appreciation (in reference to the positive coefficient). The results also conclude that stock return generally reacts contemporaneously although it is insignificant. Stock return mainly respond actively to the foreign exchange movement between a one-day to four-day lag but is not likely to react on or after a five-day lag.

In conclusion, the results seem to provide evidence that rejects the first hypothesis, confirming that the stock return of large Malaysian firms are not significantly exposed to foreign exchange rate changes, or there is no

significant relationship between stock return and the changes in exchange rate.

4.4.2 Sensitivity of Exposure to Time Horizon

Next, this study sets out to discover whether there is a difference in the exchange rate exposure before and after a crisis as hypothesized. Similar to the above, the number of firms that have significant coefficient exposure for the sub-period of July 2005 to June 2007 and of July 2007 to June 2009 is presented in Table 4.4.2. For further information, please refer to Appendix E, F, H and I that summarizes the coefficient exposure of the 80 sample firms for each of the sub-period samples. The firms are categorized into tradable and non-tradable firms.

Concurrently, the number of firms with statistically significant exposure coefficient increases from 6 in the pre-crisis period to 9 in the post-crisis period when regressed against the U.S. dollar exchange rate change. Similarly for the Japanese Yen and EURO dollar, the number of firms increases from 4 to 8 firms and 1 to 13 firms respectively. Furthermore, the results appear the same for the five days lag particularly on one day lag where the number of firms increases by over 100% with the EURO dollar showing the most significant increase in the number of firms. The sign of exposure appears to be consistent across the two sub-periods because the maximum number of firms with positive and negative coefficients during the pre- and post- crisis remains the same. However, there is an exception for the

Japanese Yen, where at lag four, the coefficient sign with higher firm numbers changes from positive to negative. This shows that during the pre-crisis period, the four firms with a positive sign are no longer positively affected during the post crisis but instead there are more firms exposed to the negative coefficient, which is a lower number.

In summary, it seems that the number of firms significantly exposed to foreign exchange changes increases during the crisis. The finding is in line with the Verschoor and Muller (2007) result where firms are more sensitive and vulnerable to the exchange rate risk during the crisis. The sign of exposure might switch across the subsample suggesting that the incidence and direction of exposure are time-varying (Dominguez and Tesar (2006)). Therefore, this finding supports the second hypothesis that claims that there is a difference in the exchange rate exposure between the pre- and post- crisis period.

Table 4.4.2
Foreign Exchange Exposure of Tradable and Non-Tradable Firms with Lag for Two Sub- periods
 $R_{it} = \alpha_i + \beta_m R_{mt} + \gamma_i \Delta X_t + \sum \delta_i \Delta X_{t-k} + e_t$

SAMPLE FIRMS	Number of firms																	
	July 2005 to June 2007									July 2007 to June 2009								
	U.S. Dollar			Japanese yen			EURO dollar			U.S. Dollar			Japanese yen			EURO dollar		
	Total	+ve	-ve	Total	+ve	-ve	Total	+ve	-ve	Total	+ve	-ve	Total	+ve	-ve	Total	+ve	-ve
Lag = 0																		
Tradable	3	1	2	3	3	0	1	1	0	6	1	5	4	2	2	9	9	0
Non-Tradable	3	0	3	1	0	1	0	0	0	3	2	1	4	3	1	4	2	2
Lag = 1																		
Tradable	3	1	2	2	2	0	3	1	2	6	0	6	6	1	5	5	2	3
Non-Tradable	1	1	0	2	2	0	2	1	1	3	1	2	5	1	4	5	3	2
Lag = 2																		
Tradable	1	1	0	2	1	1	2	1	1	2	1	1	2	1	1	7	6	1
Non-Tradable	1	1	0	4	2	2	1	1	0	1	1	0	2	2	0	4	3	1
Lag = 3																		
Tradable	4	0	4	1	0	1	3	3	0	3	0	3	5	1	4	1	1	0
Non-Tradable	1	1	0	2	1	1	2	1	1	3	0	3	1	0	1	2	1	1
Lag = 4																		
Tradable	3	0	3	0	0	0	2	2	0	4	2	2	2	0	2	2	0	2
Non-Tradable	2	2	0	4	4	0	2	1	1	2	0	2	3	0	3	0	0	0
Lag = 5																		
Tradable	1	1	0	1	1	0	2	2	0	1	0	1	1	0	1	2	1	1
Non-Tradable	1	0	1	0	0	0	0	0	0	1	0	1	1	1	0	4	2	2

Notes:

- Time series data are split into two sub-periods from June 2005 to June 2007 representing the before crisis and from July to June 2009 as the post-crisis period where the regression is performed separately for every sub-period.
- Stock return of the eighty sample firms are regressed against the U.S. dollar, Japanese Yen and EURO dollar individually with market return as the control variables on 5 days lag.
- Firms with significant coefficients exposure are determined and summarised by indicating the number of firms in total and breakdown based on the sign of the coefficients for every currencies. +ve represents positive coefficients and -ve represents the negative coefficients.
- The statistically significant level used are at 1% and 5%.

4.5 Summary of Research Results

Based on the results, the significance level of coefficient exposure is not sufficient to conclude that stock return of large Malaysian firms is significantly influenced by the changes in foreign exchange rate movement at the 1% and 5% level of significance despite incorporating the lag. The small number of firms that have significant exposures – as reported in the above tables – do not convince that there is a significant relationship between stock return and foreign exchange rate changes. Although the full year sample is divided into two sub-periods, which represent the pre- and post- crisis periods to differentiate the time-varying exposure impact, the total number of firms that are significantly exposed (less than 20% out of the 80 sample firms) is still not solid to support the relationship.

Nevertheless, the evidence does show that there are significant changes to the exposure when time evolves judging by the increase in the number of firms with significant exposure during the post-crisis period. Besides that, the magnitude and direction of the exposure appears to be inconsistent across firms and time lag.

In conclusion, regardless whether the firm is in the tradable or non-tradable sector, a majority of the firms is not quite affected by the exchange rate movement when the three currencies are used in business transactions. The next, and final chapter, concludes this study.