CHAPTER 4

EMPIRICAL RESULTS

This chapter presents the descriptive statistics of the variables and the empirical results from the models and hypotheses described in chapter 3.

4.1 Descriptive Statistics

Table 4.1 provides the descriptive statistics of stock return and interest rate correlation among seven countries. Panel A reports the average monthly return of listed companies in Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Taiwan, and Thai markets respectively. Each period t starts from July in year t to June in year $t+1$. In each market, there are five portfolio grouped by the ratio of book-to-market value of equity. The first portfolio has the lowest book-to-market equity ratio and refereed to as high-growth portfolio (or growth stocks), while the fifth portfolio has the highest book-to-market equity ratio and named as low-growth portfolio (or value stocks).

Return in Hong Kong

From July 1997 to June 2003, the average return on low-growth portfolio outperforms that on high-growth portfolio by about 1.82%. Moreover, returns on value stocks have been higher than those on growth stocks in every year. Except for the 1998 period, most portfolios have negative average returns in every period.

Return in Indonesia

It is obvious that the value stocks outperform growth stocks, on average, by approximately 1.3%. Even though the low growth portfolio has the highest average return for the overall period, there are some periods that the high-growth portfolio and other portfolios can outperform the low-growth portfolio. For example, in the 1999 period, return on high-growth portfolio was 0.5394% while return on low-growth portfolio was 0.3551%.

Table 4.1: Descriptive Statistics

Panel A: Average Return

The sample consists of listed companies in Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Taiwan, and Thai. The portfolios are grouped and ranked by book-to-market equity ratio. The period t starts from July in year t to June in year $t+1$. The average return is the simple monthly return of each portfolio.

	1997	1998	1999	2000	2001	2002	1997-2002
Hong Kong							
R1	-8.8943%	-0.1262%	-0.2862%	-4.7871%	-3.5381%	-4.9416%	-3.7622%
R2	-10.0360%	1.4030%	0.3324%	-1.3560%	-1.3458%	-4.2531%	-2.5426%
R3	-9.1837%	0.4936%	-0.1071%	-1.4943%	-2.6592%	-3.2669%	-2.7029%
R4	-9.1435%	0.9282%	-0.2124%	-2.0911%	-0.5425%	-1.4761%	-2.0896%
R5	-8.4287%	2.3892%	-0.2287%	-0.8810%	-2.2820%	-2.1827%	-1.9357%
Indonesia							
R1	-8.2836%	4.2178%	0.5394%	-3.6403%	-1.3236%	-1.4242%	-1.6524%
R2	-9.5708%	3.6130%	-0.9904%	-3.5663%	0.1065%	-1.9690%	-2.0628%
R3	-13.0852%	6.8984%	-1.3401%	-3.2156%	-0.3792%	-1.7348%	-2.1428%
R4	-9.7037%	7.8961%	-1.5469%	-2.4561%	1.0249%	-2.2445%	-1.1717%
R5	-8.4059%	10.5691%	0.3551%	-3.9696%	0.1706%	-0.8040%	-0.3474%
Malaysia							
R1	-15.8892%	3.4322%	0.1019%	-5.8951%	1.3752%	-1.0013%	-2.9794%
R2	-14.2309%	5.7352%	0.5343%	-4.8191%	1.1383%	-1.0738%	-2.1193%
R3	-12.2953%	5.7339%	0.2759%	-5.2187%	1.2547%	-0.9283%	-1.8630%
R4	-12.1393%	6.3540%	0.0358%	-4.9952%	1.3663%	-0.9248%	-1.7172%
R5	-11.2550%	7.5853%	-0.8811%	-5.2374%	1.2874%	-1.3303%	-1.6385%
Philippines							
R1	-6.7956%	1.1338%	-3.1924%	-2.5441%	-2.5067%	-0.6487%	-2.4256%
R2	-8.5887%	1.9704%	-2.7558%	-2.1365%	-2.1904%	-0.0900%	-2.2985%
R3	-5.7672%	3.3156%	-1.7085%	-3.4925%	-2.6008%	0.8740%	-1.5632%
R4	-7.1141%	3.9127%	-4.5618%	-2.6989%	-1.5154%	-0.1761%	-2.0256%
R5	-6.0811%	2.8298%	-1.1725%	-2.2917%	-2.6711%	-0.5113%	-1.6496%
Singapore							
R1	-8.0572%	5.8288%	-3.6538%	-4.4626%	-1.6938%	-2.0193%	-2.3430%
R2	-7.6206%	9.2213%	-4.8424%	-2.8986%	-1.6621%	-1.6056%	-1.5680%
R3	-8.1033%	9.5540%	-5.8842%	-2.3619%	-0.4397%	-0.7669%	-1.3337%
R4	-7.6639%	9.5356%	-4.9807%	-1.3315%	-0.5327%	-0.2760%	-0.8749%
R5	-7.2467%	9.3345%	-4.2671%	-0.8963%	-0.7681%	0.3078%	-0.5893%

Panel A: Average Return (continue)

	1997	1998	1999	2000	2001	2002	1997-2002
Taiwan							
R1	-1.4281%	0.4107%	-1.3485%	-4.8523%	-1.6356%	-1.3218%	-1.6959%
R2	-0.7754%	-1.9636%	-0.9917%	-5.1328%	-0.0460%	-0.9358%	-1.6409%
R3	-1.5710%	-0.8499%	-1.8975%	-4.4510%	0.9243%	0.3184%	-1.2544%
R4	-1.4374%	-2.1385%	-2.3939%	-4.5825%	1.3300%	0.3361%	-1.4810%
R5	-0.8423%	-2.4589%	-2.8963%	-7.0102%	3.3797%	-0.8821%	-1.7850%
Thai							
R1	-10.5059%	1.9586%	-3.9949%	-0.8693%	1.5002%	0.3608%	-1.9251%
R2	-6.0838%	1.7752%	-3.3549%	0.5055%	2.0932%	0.4441%	-0.7701%
R3	-5.3158%	4.6526%	-2.3025%	1.1493%	2.7495%	0.7653%	0.2831%
R4	-6.9632%	7.0869%	-3.4654%	1.4063%	2.5451%	1.2019%	0.3019%
R5	-3.4123%	10.9008%	-4.9483%	3.5868%	2.7471%	1.7489%	1.7705%

Panel B: Interest Rate Correlation

This table reports the interest rate correlation between each country from July 1997 to June 2003. The interest rate variables are proxied by yield on government bond for all countries except for Indonesia and Philippines, which are proxied by lending rate.

	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	Taiwan	Thai
Hong Kong	1.0000						
Indonesia	0.4098	1.0000					
Malaysia	0.9104	0.5689	1.0000				
Philippines	0.6518	0.3727	0.6967	1.0000			
Singapore	0.8743	0.4133	0.8279	0.4734	1.0000		
Taiwan	0.8918	0.3260	0.8936	0.5860	0.8936	1.0000	
Thai	0.8454	0.4794	0.8848	0.8663	0.6667	0.7701	1.0000

Return in Malaysia

Returns on growth stocks have been lower than those on value stocks by 1.34%. It also appears that during the 1997-2002 period, the higher book-to-market equity ratio the higher average return. Furthermore, in 1997, Malaysia stock market had the poorest performance compared to other six markets.

Return in Philippines

While, in most countries, the low-growth portfolios have the highest return, in Philippines, returns on low-growth portfolio are ranked the second. Return on the third quintile is the highest. However, return on low-growth portfolio also outperforms that on high-growth portfolio by 0.78%.

Return in Singapore

Except for the 1999 period, the value stocks have higher return than the growth stocks in every period, thus making the low-growth portfolio to outperforms high-growth portfolio by 1.75%. In addition, like Malaysia stocks, the higher book-to-market equity ratio the higher average return.

Return in Taiwan

Unlike other markets that had poor performance in 1997, Taiwan stocks receive a little impact from the 1997 financial crisis. In 1997, the average returns on each portfolio in Taiwan outperformed those in other six countries. Moreover, the low-growth portfolio is inferior to the high-growth portfolio by 0.09%

Return in Thai

During 1997 to 2002, the low-growth portfolio outperforms high-growth portfolio by approximately 3.70%, the highest among seven counties. Similar to the pattern in Malaysia and Singapore, the average returns in Thai increase with the ratio of book-to-market value of equity.

Conclusively, considering from the movement of each portfolio return in all countries, Taiwan stock is unique to other six countries since the high-growth portfolio has outperformed the low-growth portfolio, while in other countries, the low-growth portfolio has outperformed the high-growth portfolio. Moreover, while other countries received the impact from 1997 financial crisis and recover in 1998, in Taiwan, this impact was insignificant. In Malaysia, Singapore, and Thai, stock returns seem to be positively associated with the book-to-market equity ratio since the higher the book-to-market equity ratio, the higher the average return.

Except for Philippines and Taiwan, the low-growth portfolios have the highest average return among five portfolios. In Hong Kong, Malaysia, Philippines, Singapore, and Thai, the high-growth portfolios have the poorest performance compared to others.

Panel B provides the interest rate correlation between each country during July 1997 to June 2003. The interest rates in Hong Kong, Malaysia, Singapore, Taiwan, and Thai is highly correlated. The correlations among these countries are between 0.77 and 0.91. In Indonesia and Philippines, their interest rates are inconsiderably related to others since the correlations for these two countries range from 0.33 to 0.47. In addition, all interest rate correlations are positive, thus implying that, on average, all interest rates shift in the same direction.

4.2 Empirical Results

This section reports the empirical result from equation (1) – (4) and statistical testing for all hypotheses presented in chapter 3. The lagged effect of interest rate movement, presented in appendix A is also described in this section.

4.2.1 Interest rate sensitivity and stock return

This part presents the relation between interest rate change and stock returns in each market. Table 4.2 and 4.4 report the relation between stock return and nominal interest rate change using the market model and three-factor model as the control variables respectively. Table 4.3 and 4.5 report the relation among stock return, real interest rate change, as well as inflation rate change using the market model and three-factor model as the control variables respectively. Table A.1, A.2, and A.3 in appendix A reports the relation between stock return and last one-month, two-month, and three-month interest rate change respectively.

Hong Kong stock market

From panel A in table 4.2 and 4.3, returns on all five portfolios are not statistically associated with nominal interest rate, real interest rate, or inflation rate when the market returns are used as the control variable.

With three-factor model as the control variables, table 4.4 shows that high-growth portfolio (the first quintile portfolio) exhibits significant and positive relation with nominal interest rate, while other portfolios reveal no relation with interest rate.

These results supports the hypothesis that returns on high-growth portfolio are positively correlated with interest rate when the three-factor models are used as the control variables. Nonetheless, the hypothesis that returns on low-growth portfolio are negatively correlated with interest rate is inconclusive since the interest rate coefficients for the low-growth portfolio is negative but not statistically significant.

For the lagged effect of interest rate change, it is found that returns on high-growth portfolio are positively correlated with last three-month interest rate changes as presented in table A.3. In addition, returns on low-growth portfolio are negatively correlated with last one-month interest rate change as presented in table A.1.

Indonesia stock market

The evidence in pane B in table 4.2 is inconsistent with the hypothesis since returns on the low-growth portfolio are positively correlated with interest rate. However, when the control variables are the three-factor model, no portfolio exhibits significant association with interest rate. Moreover, the lagged effect of interest rate change affects stock returns on low-growth portfolio but the size and sign of interest rate coefficients vary across models, and interest rate variables. In appendix A, returns on low-growth portfolio are negatively associated with last one-month real interest rate and inflation rate change when market return is a control variable. On contrary, they are positively related with nominal interest rate change when three-factor model is control variables.

For the high-growth portfolio, the empirical results from table 4.2 – 4.5 are inconclusive because return on high-growth portfolio is insignificantly associated with interest rate. However, return on high-growth portfolio is negatively related with last three-month interest rate change as shown in appendix A.

Malaysia stock market

Panel C in table 4.2 - 4.5 reports the empirical results for Malaysia stock market. There is no portfolio that exhibits the statistical relationship with nominal interest rate, real rate or

inflation rate. Even though returns on high-growth portfolio are positively related with the last two-month interest rate change in the model using three-factor model as control variables, they are negatively related with the last one-month interest change in the model using market return as control variable. Thus, the results in Malaysia are mixed depending on control variables and the lagged effect of interest rate movement.

Philippines stock market

Panel D in table 4.2 - 4.5 reports the results for Philippines stock market. Like the results in Malaysia, all portfolios have no significant relation with interest rate. Returns on high and low-growth portfolios are negatively associated with nominal and real interest rate as well as inflation rate but are insignificant.

If the lagged effect of interest rate change is taken into account, the evidence in appendix A is inconsistent with the hypothesis since return on low-growth portfolio is positively related with the last three-month interest rate changes. This conclusion is also robust to interest rate variables and control variables because the sign of interest rate coefficient remain unchanged across interest rate variables and models.

Singapore stock market

When Singapore stock returns are regressed on market returns and the change in nominal interest rate, the relations between returns and interest rate are statistically significant for all portfolios, except for the third portfolio, as presented in panel E of table 4.2. The similar results can be seen in table 4.4 when the change in nominal interest rate is split into the expected inflation and real interest rate. It also appears that splitting the nominal interest rate change into these two components adds little to the information in regression. For each portfolio, the coefficients of the real rate and inflation rate changes are similar, although not identical, to the coefficients of the nominal rate change in regression.

Nevertheless, when stock returns are regressed on three-factor model and interest rate change, the results are changed. According to the results in table 4.4 and 4.5, only return on the second portfolio is correlated with interest rate and inflation rate, while those on other portfolio are not.

It can be concluded that except for the third portfolio, all portfolios have the significant interest rate sensitivities either negative or positive, when the market return is the control variables. In addition, the degrees of interest rate sensitivities are reduced from positive in high-growth portfolio to negative in low-growth portfolio. However, the effect of three-factor model makes these interest rate sensitivities statistically insignificant.

Consistent with the hypothesis, the empirical results in table 4.2 and 4.3 show that returns on high-growth portfolio, the first portfolio, are positively correlated with interest rate. In addition, table A.2 supports the hypothesis since returns on high-growth portfolio are positively correlated with the last two-month interest rate change.

Taiwan stock market

Panel F of table 4.2 – 4.5 presents the relation between stock returns and interest rate in Taiwan stock market. Similar to the evidence in Malaysia and Philippines, returns on every portfolio are not statistically linked with both interest rate and inflation rate changes. When stock returns are regressed with market return and nominal interest rate change, interest rate coefficient on high-growth portfolio is positive and that on low-growth portfolio are negative but statically insignificant. Furthermore, when stock returns are regressed with the last interest rate changes, returns on most portfolios are still not correlated with interest rate variables.

Thai stock market

Panel G in table 4.2 to 4.5 reports the relation between Thai stock returns and interest rate as well as inflation rate. In table 4.2 and 4.3, stock returns are not related with interest rate, when market returns are taken into account. The evidence found in this study is different from that in Surang (1998), which find that returns on high-growth portfolio are negatively correlated with interest rate. The difference possibly comes from the facts that both studies use different time period and interest rate variables.

But, using three-factor model as the control variables, returns on the third and fifth portfolios are related with interest rate as presented in table 4.4.

The evidence in table 4.4 supports the hypothesis that returns on low-growth portfolio are negatively correlated with interest rate. In addition, returns on high-growth portfolio are not

correlated with interest rate. Thus, high-growth portfolio is less sensitive to interest rate than low-growth portfolio.

4.2.2 The impact of growth options on interest rate risk

In this section, in order to investigate the effect of growth options on interest rate risk, the interest rate coefficients on high-growth portfolio, are compared with those on low-growth portfolio. If the growth options were analogous to call options on real assets, firms with significant growth options, the high-growth firms, could exhibit interest rate exposure different from firm with little growth options, the low-growth firms. The F-test is employed to test the hypothesis that high-growth portfolios would react differently from the low-growth portfolios to nominal interest rate, real interest rate, and inflation rate.

Table 4.6 reports the nominal interest rate, real interest rate, and inflation rate coefficients of high and low-growth portfolios. It also shows the F-statistics for testing the difference in the coefficients between high-growth portfolio and low-growth portfolio.

Panel A of table 4.6 shows the results when the sample is controlled for the difference in overall market factors. In Singapore, the interest rate sensitivities on high-growth portfolio are significantly positive while those on low-growth portfolio are significantly negative. The F-statistics also support the hypothesis that high-growth portfolio reacts to interest rate differently from the low-growth portfolio.

In Taiwan, although the signs of nominal interest rate coefficients look like Singapore, both t-statistics and F-statistics indicate no statistical significance at 95% confidence level.

In Indonesia and Malaysia, the empirical evidence is inconsistent with the hypothesis. While the differences in interest rate sensitivities between high and low-growth portfolios are significant at the 95% confidence level, the signs of sensitivities are contradictory against the hypothesis.

In Hong Kong, Philippines and Thai, even though the interest rate sensitivities on high-growth portfolios are less than those on low-growth portfolio, the F-statistics indicate that these differences are statistically insignificant at 95% confidence level. In Thai, the evidence in panel A of table A.2 shows that due to the lagged effect of interest rate change, the interest rate sensitivities of high-growth portfolio are negative while those of low-growth portfolio are positive.

However, using the three-factor model as control variables, the conclusions change considerably as shown in panel B table 4.6. In Singapore, all interest rate coefficients are statistically insignificant and the signs of the coefficients are inversed from the results in panel A. The interest rate sensitivities on high-growth portfolio are negative while those on low-growth portfolio are positive.

In Indonesia and Malaysia, the effect of three-factor model reduces the degree of interest rate sensitivities on both high and low-growth portfolios. Moreover, the F-statistics indicate that the differences in interest rate coefficients are not statistically significant.

In Hong Kong, the empirical results are consistent with the hypothesis since high-growth portfolio has interest rate sensitivity different from low-growth portfolio. Returns on high-growth portfolio are positively correlated with interest rate change while those on low-growth portfolio are not correlated.

In Philippines, Taiwan, and Thai, the results remain inconclusive. Both high and low-growth portfolios have no statistical relation with interest rate. The F-statistics also point out no difference in interest rate coefficients between high and low-growth portfolio. However, in Thai, with the lagged effect of interest rate movement, panel B of table A.1 shows that returns on high-growth portfolio are sensitive to the last one-month interest rate change while those on low-growth portfolio are not.

It can be concluded that the relation between growth options and interest rate risk on stock returns is not robust to the samples and models. The sign and size of interest rate sensitivities on high and low-growth portfolio depend on countries, and control variables. There are three types of sample; the sample that support hypothesis, that against hypothesis, and that is inconclusive. Controlling for the market factors, the evidence found in Singapore is consistent with the hypothesis while that in Indonesia and Malaysia opposes the hypothesis and others are inconclusive. When controlled by three-factor model, only the results in Hong Kong support the hypothesis while others are indecisive.

4.2.3 The country effect on interest rate risk

This section presents the results of country effect on interest rate risk of stock returns. The interest rate coefficients on each portfolio are compared among different countries. If country factor affects the relationship between stock returns and interest rate, the interest rate sensitivity

in one country should differ from each other. The F-test is used to test the hypothesis that stock returns in each country would react differently from those in other countries to nominal interest rate, real interest rate, and inflation rate.

Table 4.7 reports the nominal interest rate, real interest rate, and inflation rate coefficients of all five portfolios and F-statistics for testing the difference in the coefficients among seven countries. Panel A shows the results when stock returns are controlled by market factors. In the same portfolio, the interest rate coefficients are positive in some countries, while, in other countries, the interest rate coefficients are negative. F-statistics also indicate that interest rate sensitivities on all portfolios are statistically different from one country to other country, thus consistent with the hypothesis. When nominal interest rate change is separated into real rate and inflation rate changes, the conclusions change a little. The coefficients on the third and fourth portfolios are not different among all countries since most of them are not statistically different from zero.

When stock returns are regressed with three-factor model and interest rate variables, the results change considerably as presented in panel B. There are the differences in nominal rate coefficient for the first, second, and third portfolio. The third portfolio also is the only portfolio that has the difference in coefficients of real rate and inflation rate.

Conclusively, from the results described above, country effect is strong when stock returns are controlled by market factor. Interest rate sensitivities on stock returns in one country are different from those in other countries. Nevertheless, the three-factor model alleviates the country effect. When stock returns are controlled by three-factor model, stock returns in most countries are less sensitive to interest rate and most interest rate coefficients are indifferent among countries

Table 4.2: The Estimated Relationship between Stock Return and Nominal Interest Rate Change (Using Market Model)

The table reports the investigation of relationship between stock return and nominal interest rate change using sample period from July 1997 to June 2003. Specifically, the following regression is estimated

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \gamma_{i,I} \Delta I_t + \varepsilon_{i,t} \tag{1}$$

where i,t denotes portfolio i at the period t. R is the stock return. R_m is the market return. ΔI is the nominal interest rate change.

Panel A – Hong Kong

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0132**	0.0007	-0.0011	0.0062**	0.0075**
	(-3.64)	(0.26)	(-0.55)	(2.50)	(2.08)
R_m	0.9304**	1.0160**	1.0063**	1.0281**	1.0193**
	(28.37)	(44.61)	(55.67)	(45.86)	(31.45)
ΔI	4.2944	-10.8187	-7.8277	7.8333	6.5188
	(0.48)	(-1.74)	(-1.58)	(1.28)	(0.74)
Adjusted R-squared	0.9333	0.9733	0.9825	0.9731	0.9447

Panel B – Indonesia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0049	-0.0082**	-0.0053	0.0045	0.0139**
	(-1.24)	(-2.10)	(-1.45)	(1.35)	(2.67)
R_m	0.7774**	0.8356**	1.0772**	1.1117**	1.1981**
	(22.86)	(24.82)	(34.07)	(38.74)	(26.75)
ΔI	-11.6339	-6.1575	-13.9005**	11.6910	20.0008**
	(-1.58)	(-0.84)	(-2.03)	(1.88)	(2.06)
Adjusted R-squared	0.9028	0.9139	0.9535	0.9605	0.9189

Panel C – Malaysia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0099**	-0.0011	0.0011	0.0033	0.0066
	(-2.65)	(-0.48)	(0.65)	(1.23)	(1.83)
R_m	1.0127**	0.9860**	0.9658**	0.9765**	1.0590**
	(40.54)	(62.37)	(81.90)	(54.42)	(43.84)
ΔI	-25.7257	-7.3935	-4.2715	7.9062	29.4844
	(-1.37)	(-0.62)	(-0.48)	(0.58)	(1.62)
Adjusted R-squared	0.9614	0.9831	0.9901	0.9777	0.9657

Panel D – Philippines

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0068	-0.0043	0.0062	-0.0005	0.0054
	(-1.70)	(-0.78)	(1.87)	(-0.09)	(1.13)
R_m	0.8805**	0.9289**	1.0903**	0.9950**	1.1054**
	(21.99)	(16.63)	(32.60)	(19.45)	(22.91)
ΔI	-0.9912	3.8176	2.0081	-1.1881	-3.6465
	(-0.27)	(0.74)	(0.65)	(-0.25)	(-0.82)
Adjusted R-squared	0.8753	0.7972	0.9386	0.8458	0.8849

Panel E – Singapore

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0105**	-0.0014	0.0003	0.0046**	0.0070**
	(-2.96)	(-0.66)	(0.10)	(2.03)	(2.36)
R_m	0.9146**	1.0195**	1.0239**	1.0293**	1.0127**
	(30.14)	(56.82)	(46.32)	(53.01)	(39.81)
ΔI	32.1363**	30.9956**	-7.3827	-22.5406**	-33.2085**
	(2.09)	(3.41)	(-0.66)	(-2.29)	(-2.58)
Adjusted R-squared	0.9278	0.9787	0.9688	0.9763	0.9590

Panel F – Taiwan

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0025	-0.0009	0.0019	-0.0002	0.0016
	(-0.35)	(-0.21)	(0.84)	(-0.04)	(0.23)
R_m	0.8388**	0.9256**	0.9390**	0.9916**	1.3049**
	(12.52)	(24.40)	(44.26)	(26.60)	(19.82)
ΔI	24.8956	19.4521	-5.9440	-18.5796	-19.8242
	(0.69)	(0.95)	(-0.52)	(-0.93)	(-0.56)
Adjusted R-squared	0.6995	0.8984	0.9662	0.9108	0.8500

Panel G – Thai

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0190**	-0.0073**	0.0045	0.0040	0.0178**
	(-4.08)	(-2.02)	(1.58)	(1.29)	(3.17)
R_m	0.9700**	0.8534**	0.8653**	1.0616**	1.2498**
	(20.73)	(23.48)	(30.17)	(34.12)	(22.16)
ΔI	-4.2471	-2.1896	11.0905	2.6095	-7.2632
	(-0.46)	(-0.30)	(1.94)	(0.42)	(-0.65)
Adjusted R-squared	0.8687	0.8942	0.9307	0.9463	0.8837

** Significant at 95% confidence level, t-statistics is shown in the parenthesis.

Table 4.3: The Estimated Relationship among Stock Return, Inflation Rate Change, and Real Interest Rate Change (Using Market Model)

The table reports the investigation of relationship among stock return, inflation rate, and real interest rate change using sample period from July 1997 to June 2003. Specifically, the following regression is estimated

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \gamma_{i,\pi}\Delta\pi_t + \gamma_{i,r}\Delta r_t + \varepsilon_{i,t} \tag{2}$$

Where *i,t* denotes portfolio i at the period t. R is the stock return. R_m is the market return. $\Delta\pi$ is the inflation rate change. Δr is the real rate change.

Panel A – Hong Kong

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0132**	0.0011	-0.0008	0.0060**	0.0069
	(-3.66)	(0.44)	(-0.41)	(2.45)	(1.92)
R_m	0.9296**	1.0258**	1.0117**	1.0247**	1.0082**
	(29.13)	(45.82)	(57.42)	(47.29)	(31.74)
$\Delta\pi$	4.1105	-5.1609	-3.7049	4.6888	0.0666
	(0.58)	(-1.04)	(-0.95)	(0.97)	(0.01)
Δr	4.1255	-5.1571	-3.3808	4.2693	0.1431
	(0.60)	(-1.07)	(-0.89)	(0.92)	(0.02)
Adjusted R-squared	0.9328	0.9726	0.9823	0.9733	0.9436

Panel B – Indonesia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0047	-0.0081**	-0.0051	0.0043	0.0137**
	(-1.17)	(-2.05)	(-1.35)	(1.27)	(2.53)
R_m	0.7996**	0.8495**	1.1043**	1.0842**	1.1624**
	(24.66)	(26.87)	(36.22)	(39.71)	(26.90)
$\Delta\pi$	0.8304	0.1033	0.3448	-2.8040	1.5256
	(0.24)	(0.03)	(0.10)	(-0.95)	(0.33)
Δr	0.8531	0.3056	0.4412	-3.1840	1.5841
	(0.22)	(0.08)	(0.12)	(-1.00)	(0.31)
Adjusted R-squared	0.8979	0.9124	0.9500	0.9586	0.9128

Panel C – Malaysia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0099**	-0.0012	0.0012	0.0033	0.0066
	(-2.65)	(-0.49)	(0.68)	(1.22)	(1.82)
R_m	1.0124**	0.9859**	0.9676**	0.9755**	1.0586**
	(40.21)	(61.84)	(81.77)	(53.91)	(43.48)
$\Delta\pi$	-25.1696	-8.3541	-4.3434	8.5113	29.3559
	(-1.36)	(-0.71)	(-0.50)	(0.64)	(1.64)
Δr	-25.6339	-8.4188	-3.9787	8.3459	29.6855
	(-1.38)	(-0.72)	(-0.46)	(0.63)	(1.66)
Adjusted R-squared	0.9609	0.9829	0.9901	0.9774	0.9653

Panel D – Philippines

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0066	-0.0043	0.0062	-0.0005	0.0052
	(-1.68)	(-0.77)	(1.86)	(-0.10)	(1.10)
R_m	0.8877**	0.9322**	1.0928**	0.9925**	1.0947**
	(21.97)	(16.39)	(32.11)	(19.05)	(22.59)
$\Delta\pi$	-1.9884	3.5109	1.4840	-0.7793	-2.2272
	(-0.53)	(0.66)	(0.47)	(-0.16)	(-0.49)
Δr	-1.2046	3.8675	1.7961	-1.0631	-3.3960
	(-0.33)	(0.75)	(0.58)	(-0.22)	(-0.77)
Adjusted R-squared	0.8759	0.7947	0.9379	0.8438	0.8866

Panel E – Singapore

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0105**	-0.0014	0.0002	0.0046**	0.0071**
	(-2.94)	(-0.66)	(0.08)	(2.06)	(2.37)
R_m	0.9151**	1.0196**	1.0252**	1.0283**	1.0118**
	(29.99)	(56.29)	(47.15)	(53.27)	(39.77)
$\Delta\pi$	33.1999**	30.7386**	-7.9784	-22.6251**	-33.3350**
	(2.14)	(3.34)	(-0.72)	(-2.31)	(-2.58)
Δr	33.3277**	30.7665**	-6.6416	-23.3962**	-34.0564**
	(2.15)	(3.35)	(-0.60)	(-2.39)	(-2.64)
Adjusted R-squared	0.9271	0.9783	0.9699	0.9766	0.9591

Panel F – Taiwan

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0039	-0.0010	0.0017	0.0004	0.0028
	(-0.55)	(-0.25)	(0.76)	(0.11)	(0.39)
R_m	0.8504**	0.9292**	0.9401**	0.9868**	1.2936**
	(12.62)	(24.47)	(44.41)	(26.26)	(19.58)
$\Delta\pi$	-6.2126	15.1202	-9.1273	-4.3290	4.5487
	(-0.21)	(0.89)	(-0.97)	(-0.26)	(0.15)
Δr	-6.1425	15.1527	-9.0440	-4.2427	4.2765
	(-0.21)	(0.90)	(-0.97)	(-0.26)	(0.15)
Adjusted R-squared	0.6932	0.8973	0.9660	0.9085	0.8477

Panel G – Thai

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0189**	-0.0074**	0.0044	0.0040	0.0179**
	(-4.05)	(-2.03)	(1.51)	(1.30)	(3.16)
R_m	0.9734**	0.8525**	0.8641**	1.0609**	1.2490**
	(20.73)	(23.22)	(29.67)	(34.09)	(21.92)
$\Delta\pi$	-2.5515	-2.7570	9.7713	2.6478	-7.1107
	(-0.28)	(-0.39)	(1.73)	(0.44)	(-0.64)
Δr	-3.4719	-2.8882	9.9829	3.3359	-6.9587
	(-0.38)	(-0.40)	(1.74)	(0.54)	(-0.62)
Adjusted R-squared	0.8688	0.8928	0.9290	0.9467	0.8821

** Significant at 95% confidence level, t-statistics is shown in the parenthesis.

Table 4.4: The Estimated Relationship between Stock Return and Nominal Interest Rate Change (Using Three-Factor Model)

The table reports the investigation of relationship between stock return and nominal interest rate change using sample period from July 1997 to June 2003. Specifically, the following regression is estimated

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + s_i SMB_t + h_i HML_t + \gamma_i \Delta I_t + \varepsilon_{i,t} \tag{3}$$

where *i,t* denotes portfolio i at the period t. R is the stock return. R_m is the market return. SMB is the return on mimicking portfolio for the size factor. HML is the return on mimicking portfolio for the book-to-market factor. ΔI is the nominal interest rate change.

Panel A – Hong Kong

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0042**	0.0041	0.0001	0.0019	-0.0019
	(-2.02)	(1.71)	(0.05)	(0.87)	(-1.10)
R_m	0.9566**	1.0241**	1.0103**	1.0202**	0.9888**
	(51.46)	(47.31)	(53.25)	(52.66)	(63.16)
SMB	-0.1901**	-0.0607	-0.0287	0.0631	0.2164**
	(-5.17)	(-1.42)	(-0.76)	(1.65)	(6.99)
HML	-0.5757**	-0.2273**	-0.0740	0.2949**	0.5822**
	(-11.07)	(-3.76)	(-1.40)	(5.44)	(13.30)
ΔI	11.4936**	-8.7389	-6.6764	5.9700	-2.0484
	(2.20)	(-1.44)	(-1.25)	(1.10)	(-0.47)
Adjusted R-squared	0.9808	0.9784	0.9828	0.9821	0.9885

Panel B – Indonesia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	0.0026	-0.0011	0.0000	-0.0007	-0.0007
	(0.69)	(-0.29)	(-0.01)	(-0.23)	(-0.21)
R_m	0.8953**	0.9360**	1.1646**	1.0122**	0.9919**
	(21.95)	(23.17)	(28.56)	(28.09)	(26.38)
SMB	-0.1332**	-0.1773**	-0.0782	0.0247	0.3640**
	(-2.28)	(-3.07)	(-1.34)	(0.48)	(6.77)
HML	-0.3293**	-0.2968**	-0.2391**	0.2555**	0.6098**
	(-4.65)	(-4.24)	(-3.38)	(4.09)	(9.35)
ΔI	-3.2613	1.9644	-8.0078	5.9866	3.3181
	(-0.49)	(0.30)	(-1.21)	(1.02)	(0.54)
Adjusted R-squared	0.9269	0.9353	0.9595	0.9674	0.9701

Panel C – Malaysia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0018	0.0027	0.0004	-0.0014	0.0001
	(-1.12)	(1.69)	(0.26)	(-0.80)	(0.07)
R_m	1.0687**	0.9813**	0.9146**	0.9616**	1.0738**
	(78.25)	(71.43)	(70.44)	(61.85)	(67.99)
SMB	-0.0963**	0.0849**	0.2021**	-0.0179	-0.1728**
	(-2.70)	(2.37)	(5.97)	(-0.44)	(-4.19)
HML	-0.6306**	-0.2993**	0.0525	0.3684**	0.5091**
	(-18.62)	(-8.79)	(1.63)	(9.55)	(13.00)
ΔI	-7.0849	5.2498	-0.1849	-5.1380	7.1580
	(-0.91)	(0.67)	(-0.02)	(-0.58)	(0.79)
Adjusted R-squared	0.9936	0.9929	0.9934	0.9907	0.9919

Panel D – Philippines

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0029	-0.0023	0.0057	-0.0017	0.0013
	(-1.10)	(-0.48)	(1.68)	(-0.43)	(0.32)
R_m	0.9672**	0.9906**	1.0823**	0.9407**	1.0193**
	(34.28)	(19.18)	(30.05)	(22.00)	(24.31)
SMB	-0.2109**	-0.0046	0.0347	-0.0948	0.2756**
	(-4.20)	(-0.05)	(0.54)	(-1.24)	(3.69)
HML	-0.4368**	-0.4155**	0.0297	0.4365**	0.3861**
	(-9.28)	(-4.82)	(0.49)	(6.12)	(5.52)
ΔI	-2.2979	2.5167	2.0909	0.2083	-2.5180
	(-0.94)	(0.56)	(0.67)	(0.06)	(-0.69)
Adjusted R-squared	0.9454	0.8470	0.9372	0.9049	0.9233

Panel E – Singapore

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0012	-0.0001	0.0016	0.0001	-0.0004
	(-0.55)	(-0.07)	(0.59)	(0.06)	(-0.19)
R_m	0.9676**	1.0145**	1.0176**	1.0067**	0.9936**
	(52.78)	(55.85)	(45.03)	(61.32)	(62.59)
SMB	-0.1868**	0.0896**	0.1041	0.0618	-0.0686
	(-4.21)	(2.04)	(1.90)	(1.55)	(-1.78)
HML	-0.6263**	-0.1040	-0.1124	0.3073**	0.5354**
	(-11.36)	(-1.91)	(-1.65)	(6.23)	(11.22)
ΔI	-6.8866	23.1967**	-15.8890	-3.0654	2.6442
	(-0.72)	(2.46)	(-1.35)	(-0.36)	(0.32)
Adjusted R-squared	0.9764	0.9804	0.9708	0.9848	0.9857

Panel F – Taiwan

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0009	0.0001	0.0017	-0.0013	0.0004
	(-0.39)	(0.05)	(0.76)	(-0.59)	(0.13)
R_m	1.0335**	1.0136**	0.9283**	0.9128**	1.1118**
	(46.26)	(43.86)	(41.33)	(41.81)	(39.15)
SMB	-0.2969**	-0.0264	-0.0399	-0.0805	0.4437**
	(-4.93)	(-0.42)	(-0.66)	(-1.37)	(5.80)
HML	-0.5886**	-0.3046**	0.0525**	0.3102**	0.5305**
	(-23.91)	(-11.96)	(2.12)	(12.90)	(16.96)
ΔI	-9.5830	2.7161	-3.4464	-2.4684	12.7818
	(-0.85)	(0.23)	(-0.31)	(-0.23)	(0.90)
Adjusted R-squared	0.9713	0.9676	0.9674	0.9737	0.9760

Panel G – Thai

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0051**	0.0014	0.0045	-0.0012	0.0004
	(-2.03)	(0.58)	(1.45)	(-0.43)	(0.15)
R_m	1.0965**	0.9832**	0.8384**	0.9778**	1.1040**
	(37.13)	(34.96)	(22.98)	(29.84)	(34.65)
SMB	-0.3510**	-0.1454**	-0.0421	0.0774	0.4611**
	(-8.14)	(-3.54)	(-0.79)	(1.62)	(9.92)
HML	-0.4791**	-0.4038**	0.0541	0.2536**	0.5751**
	(-11.14)	(-9.86)	(1.02)	(5.32)	(12.40)
ΔI	-2.5562	-4.3858	12.8684**	4.3260	-10.2523**
	(-0.53)	(-0.96)	(2.16)	(0.81)	(-1.97)
Adjusted R-squared	0.9675	0.9606	0.9302	0.9630	0.9769

** Significant at 95% confidence level, t-statistics is shown in the parenthesis.

Table 4.5: The Estimated Relationship among Stock Return, Inflation Rate, and Real Interest Rate Change (Using Three-Factor Model)

The table reports the investigation of relationship among stock return, inflation rate, and real interest rate change using sample period from July 1997 to June 2003. Specifically, the following regression is estimated

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + s_i SMB_t + h_i HML_t + \gamma_{i,\pi} \Delta\pi_t + \gamma_{i,r} \Delta r_t + \varepsilon_{i,t} \tag{4}$$

Where i,t denotes portfolio i at the period t. R is the stock return. R_m is the market return. SMB is the return on mimicking portfolio for the size factor. HML is the return on mimicking portfolio for the book-to-market factor. $\Delta\pi$ is the inflation rate change. Δr is the real rate change.

Panel A – Hong Kong

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0047**	0.0045	0.0004	0.0018	-0.0020
	(-2.26)	(1.87)	(0.19)	(0.86)	(-1.14)
R_m	0.9447**	1.0328**	1.0150**	1.0215**	0.9860**
	(51.94)	(49.35)	(55.60)	(56.07)	(65.60)
SMB	-0.1714**	-0.0750	-0.0325	0.0568	0.2222**
	(-4.63)	(-1.76)	(-0.88)	(1.53)	(7.26)
HML	-0.5804**	-0.2235**	-0.0777	0.3057**	0.5760**
	(-10.85)	(-3.63)	(-1.45)	(5.70)	(13.02)
$\Delta\pi$	5.2947	-4.3774	-3.1956	5.2922	-3.0139
	(1.28)	(-0.92)	(-0.77)	(1.27)	(-0.88)
Δr	5.2769	-4.4010	-2.8917	4.8347	-2.8190
	(1.32)	(-0.96)	(-0.72)	(1.21)	(-0.85)
Adjusted R-squared	0.9801	0.9781	0.9827	0.9828	0.9885

Panel B – Indonesia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	0.0028	-0.0012	0.0005	-0.0012	-0.0010
	(0.75)	(-0.32)	(0.14)	(-0.35)	(-0.28)
R_m	0.9035**	0.9331**	1.1866**	0.9934**	0.9834**
	(24.22)	(25.39)	(31.54)	(30.21)	(28.66)
SMB	-0.1375**	-0.1749**	-0.0859	0.0345	0.3637**
	(-2.34)	(-3.02)	(-1.45)	(0.67)	(6.72)
HML	-0.3369**	-0.2917**	-0.2597**	0.2672**	0.6211**
	(-4.85)	(-4.26)	(-3.70)	(4.36)	(9.71)
$\Delta\pi$	0.4055	0.0708	-0.1036	-2.0192	1.6465
	(0.13)	(0.02)	(-0.03)	(-0.76)	(0.59)
Δr	0.3893	0.2627	-0.0457	-2.3371	1.7308
	(0.12)	(0.08)	(-0.01)	(-0.81)	(0.57)
Adjusted R-squared	0.9256	0.9348	0.9581	0.9670	0.9697

Panel C – Malaysia

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0018	0.0027	0.0005	-0.0015	0.0000
	(-1.11)	(1.69)	(0.35)	(-0.82)	(0.02)
R_m	1.0691**	0.9812**	0.9155**	0.9614**	1.0728**
	(78.02)	(71.40)	(72.13)	(62.14)	(67.88)
SMB	-0.0985**	0.0884**	0.2104**	-0.0238	-0.1765**
	(-2.72)	(2.43)	(6.27)	(-0.58)	(-4.23)
HML	-0.6304**	-0.2998**	0.0506	0.3694**	0.5102**
	(-18.47)	(-8.76)	(1.60)	(9.59)	(12.96)
$\Delta\pi$	-6.5406	4.7605	0.5315	-4.9718	6.2203
	(-0.85)	(0.62)	(0.07)	(-0.57)	(0.70)
Δr	-6.7085	5.0395	1.1759	-5.4330	5.9262
	(-0.87)	(0.65)	(0.16)	(-0.63)	(0.67)
Adjusted R-squared	0.9935	0.9929	0.9936	0.9908	0.9918

Panel D – Philippines

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0029	-0.0023	0.0057	-0.0017	0.0012
	(-1.09)	(-0.47)	(1.67)	(-0.42)	(0.31)
R_m	0.9678**	0.9887**	1.0842**	0.9435**	1.0157**
	(33.89)	(18.93)	(29.81)	(21.86)	(24.05)
SMB	-0.2106**	-0.0058	0.0360	-0.0932	0.2735**
	(-4.16)	(-0.06)	(0.56)	(-1.22)	(3.65)
HML	-0.4352**	-0.4213**	0.0359	0.4444**	0.3762**
	(-9.05)	(-4.79)	(0.59)	(6.11)	(5.29)
$\Delta\pi$	-2.4141	3.0472	1.5142	-0.2643	-1.8830
	(-0.96)	(0.66)	(0.47)	(-0.07)	(-0.51)
Δr	-2.3277	2.7188	1.8829	0.1795	-2.4536
	(-0.94)	(0.60)	(0.60)	(0.05)	(-0.67)
Adjusted R-squared	0.9446	0.8451	0.9365	0.9041	0.9230

Panel E – Singapore

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0012	-0.0001	0.0015	0.0002	-0.0003
	(-0.55)	(-0.06)	(0.56)	(0.11)	(-0.18)
R_m	0.9679**	1.0139**	1.0199**	1.0050**	0.9933**
	(52.25)	(55.18)	(45.36)	(61.53)	(62.01)
SMB	-0.1885**	0.0923**	0.0899	0.0726	-0.0662
	(-4.14)	(2.04)	(1.62)	(1.81)	(-1.68)
HML	-0.6247**	-0.1059	-0.1058	0.3013**	0.5351**
	(-11.17)	(-1.91)	(-1.56)	(6.11)	(11.07)
$\Delta\pi$	-6.4581	22.7043**	-15.9779	-3.3040	3.0357
	(-0.67)	(2.37)	(-1.36)	(-0.39)	(0.36)
Δr	-6.3228	22.4371**	-14.9304	-4.0349	2.8510
	(-0.65)	(2.34)	(-1.27)	(-0.47)	(0.34)
Adjusted R-squared	0.9760	0.9800	0.9712	0.9850	0.9855

Panel F – Taiwan

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0009	0.0007	0.0014	-0.0014	0.0002
	(-0.40)	(0.31)	(0.62)	(-0.66)	(0.08)
R_m	1.0312**	1.0100**	0.9305**	0.9146**	1.1137**
	(46.79)	(44.69)	(41.88)	(42.43)	(39.34)
SMB	-0.2969**	-0.0235	-0.0420	-0.0821	0.4445**
	(-4.94)	(-0.38)	(-0.69)	(-1.40)	(5.76)
HML	-0.5874**	-0.3048**	0.0536**	0.3120**	0.5266**
	(-24.04)	(-12.16)	(2.18)	(13.05)	(16.78)
$\Delta\pi$	-9.0485	14.4573	-9.2963	-4.3080	8.1955
	(-0.99)	(1.54)	(-1.00)	(-0.48)	(0.69)
Δr	-9.1263	14.4040	-9.1946	-4.1264	8.0434
	(-1.00)	(1.54)	(-1.00)	(-0.46)	(0.69)
Adjusted R-squared	0.9714	0.9683	0.9674	0.9738	0.9756

Panel G – Thai

	Dependent Variables				
	R_1	R_2	R_3	R_4	R_5
INTERCEPT	-0.0049**	0.0013	0.0044	-0.0012	0.0004
	(-1.99)	(0.55)	(1.38)	(-0.44)	(0.16)
R_m	1.0954**	0.9827**	0.8386**	0.9794**	1.1038**
	(37.79)	(34.73)	(22.65)	(29.96)	(34.34)
SMB	-0.3600**	-0.1436**	-0.0391	0.0809	0.4618**
	(-8.50)	(-3.47)	(-0.72)	(1.69)	(9.84)
HML	-0.4710**	-0.4052**	0.0521	0.2498**	0.5743**
	(-11.14)	(-9.82)	(0.97)	(5.24)	(12.26)
$\Delta\pi$	-0.6375	-5.0161	11.4152	4.2186	-9.9802
	(-0.14)	(-1.11)	(1.94)	(0.81)	(-1.95)
Δr	-1.4612	-5.0002	11.5857	4.8131	-9.9375
	(-0.31)	(-1.10)	(1.94)	(0.92)	(-1.92)
Adjusted R-squared	0.9687	0.9602	0.9283	0.9632	0.9766

** Significant at 95% confidence level, t-statistics is shown in the parenthesis.

Table 4.6: The Impact of Growth Option on the Relationship between Stock Return and Interest Rate Change

The table reports the results of testing the impact of growth option on the relationship between stock return and interest rate change using sample period from July 1997 to June 2003. Specifically, the following pair of coefficients is tested

$$H_0 : \gamma_1 = \gamma_5$$
$$H_1 : \gamma_1 \neq \gamma_5$$

Where γ is the nominal interest rate, real interest rate, or inflation rate coefficients in equation (1) – (4). The subscript 1 and 5 indicates the high-growth portfolio and low-growth portfolio respectively.

Panel A: The market model

	Country						
	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	Taiwan	Thai
Nominal Interest Rate							
High-growth portfolio	4.2944	-11.6339	-25.7257	-0.9912	32.1363**	24.8956	-4.2471
	(0.48)	(-1.58)	(-1.37)	(-0.27)	(2.09)	(0.69)	(-0.46)
Low-growth portfolio	6.5188	20.0008**	29.4844	-3.6465	-33.2085**	-19.8242	-7.2632
	(0.74)	(2.06)	(1.62)	(-0.82)	(-2.58)	(-0.56)	(-0.65)
F-statistics	0.0311	6.7160**	4.4382**	0.2110	10.6173**	0.7856	0.0425
Real Interest Rate							
High-growth portfolio	4.1255	0.8531	-25.6339	-1.2046	33.3277**	-6.1425	-3.4719
	(0.60)	(0.22)	(-1.38)	(-0.33)	(2.15)	(-0.21)	(-0.38)
Low-growth portfolio	0.1431	1.5841	29.6855	-3.3960	-34.0564**	4.2765	-6.9587
	(0.02)	(0.31)	(1.66)	(-0.77)	(-2.64)	(0.15)	(-0.62)
F-statistics	0.1700	0.0134	4.6101**	0.1451	11.1854**	0.0623	0.0575
Inflation Rate							
High-growth portfolio	4.1105	0.8304	-25.1696	-1.9884	33.1999**	-6.2126	-2.5515
	(0.58)	(0.24)	(-1.36)	(-0.53)	(2.14)	(-0.21)	(-0.28)
Low-growth portfolio	0.0666	1.5256	29.3559	-2.2272	-33.3350**	4.5487	-7.1107
	(0.01)	(0.33)	(1.64)	(-0.49)	(-2.58)	(0.15)	(-0.64)
F-statistics	0.1632	0.0141	4.5072**	0.0017	10.8490**	0.0654	0.1007

Panel B: The three-factor model

	Country						
	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	Taiwan	Thai
Nominal Interest Rate							
High-growth portfolio	11.4936**	-3.2613	-7.0849	-2.2979	-6.8866	-9.5830	-2.5562
	(2.20)	(-0.49)	(-0.91)	(-0.94)	(-0.72)	(-0.85)	(-0.53)
Low-growth portfolio	-2.0484	3.3181	7.1580	-2.5180	2.6442	12.7818	-10.2523**
	(-0.47)	(0.54)	(0.79)	(-0.69)	(0.32)	(0.90)	(-1.97)
F-statistics	3.9438**	0.5343	1.4309	0.0025	0.5736	1.5220	1.1794
Real Interest Rate							
High-growth portfolio	5.2769	0.3893	-6.7085	-2.3277	-6.3228	-9.1263	-1.4612
	(1.32)	(0.12)	(-0.87)	(-0.94)	(-0.65)	(-1.00)	(-0.31)
Low-growth portfolio	-2.8190	1.7308	5.9262	-2.4536	2.8510	8.0434	-9.9375
	(-0.85)	(0.57)	(0.67)	(-0.67)	(0.34)	(0.69)	(-1.92)
F-statistics	2.4377	0.0910	1.1569	0.0008	0.5160	1.3405	1.4800
Inflation Rate							
High-growth portfolio	5.2947	0.4055	-6.5406	-2.4141	-6.4581	-9.0485	-0.6375
	(1.28)	(0.13)	(-0.85)	(-0.96)	(-0.67)	(-0.99)	(-0.14)
Low-growth portfolio	-3.0139	1.6465	6.2203	-1.8830	3.0357	8.1955	-9.9802
	(-0.88)	(0.59)	(0.70)	(-0.51)	(0.36)	(0.69)	(-1.95)
F-statistics	2.3836	0.0911	1.1903	0.0140	0.5526	1.3298	1.8344

** Significant at the 95% confidence level, t-statistics is shown in the parenthesis.

Table 4.7: The Impact of Country Effect on the Relationship between Stock Return and Interest Rate Change

The table reports the results of testing the impact of country effect on the relationship between stock return and interest rate change using sample period from July 1997 to June 2003. Specifically, the following group of coefficients is tested

$$H_0 : \gamma_i^1 = \gamma_i^2 = ... = \gamma_i^j$$
$$H_1 : \gamma_i^1 \neq \gamma_i^2 \neq ... \neq \gamma_i^j$$

Where i and j indicate the portfolio i in country j. γ is the interest rate coefficients in equation (1) – (4).

Panel A: The market model

	Country							
	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	Taiwan	Thai	F-statistics
Nominal Interest Rate								
Portfolio 1	4.2944	-11.6339	-25.7257	-0.9912	32.1363**	24.8956	-4.2471	4.3374**
	(0.48)	(-1.58)	(-1.37)	(-0.27)	(2.09)	(0.69)	(-0.46)	
Portfolio 2	-10.8187	-6.1575	-7.3935	3.8176	30.9956**	19.4521	-2.1896	5.4150**
	(-1.74)	(-0.84)	(-0.62)	(0.74)	(3.41)	(0.95)	(-0.30)	
Portfolio 3	-7.8277	-13.9005**	-4.2715	2.0081	-7.3827	-5.9440	11.0905	11.4656**
	(-1.58)	(-2.03)	(-0.48)	(0.65)	(-0.66)	(-0.52)	(1.94)	
Portfolio 4	7.8333	11.6910	7.9062	-1.1881	-22.5406**	-18.5796	2.6095	4.7081**
	(1.28)	(1.88)	(0.58)	(-0.25)	(-2.29)	(-0.93)	(0.42)	
Portfolio 5	6.5188	20.0008**	29.4844	-3.6465	-33.2085**	-19.8242	-7.2632	5.5477**
	(0.74)	(2.06)	(1.62)	(-0.82)	(-2.58)	(-0.56)	(-0.65)	
Real Interest Rate								
Portfolio 1	4.1255	0.8531	-25.6339	-1.2046	33.3277**	-6.1425	-3.4719	5.4411**
	(0.60)	(0.22)	(-1.38)	(-0.33)	(2.15)	(-0.21)	(-0.38)	
Portfolio 2	-5.1571	0.3056	-8.4188	3.8675	30.7665**	15.1527	-2.8882	4.4069**
	(-1.07)	(0.08)	(-0.72)	(0.75)	(3.35)	(0.90)	(-0.40)	
Portfolio 3	-3.3808	0.4412	-3.9787	1.7961	-6.6416	-9.0440	9.9829	2.2436
	(-0.89)	(0.12)	(-0.46)	(0.58)	(-0.60)	(-0.97)	(1.74)	
Portfolio 4	4.2693	-3.1840	8.3459	-1.0631	-23.3962**	-4.2427	3.3359	1.9855
	(0.92)	(-1.00)	(0.63)	(-0.22)	(-2.39)	(-0.26)	(0.54)	
Portfolio 5	0.1431	1.5841	29.6855	-3.3960	-34.0564**	4.2765	-6.9587	4.5356**
	(0.02)	(0.31)	(1.66)	(-0.77)	(-2.64)	(0.15)	(-0.62)	
Inflation Rate								
Portfolio 1	4.1105	0.8304	-25.1696	-1.9884	33.1999**	-6.2126	-2.5515	5.3398**
	(0.58)	(0.24)	(-1.36)	(-0.53)	(2.14)	(-0.21)	(-0.28)	
Portfolio 2	-5.1609	0.1033	-8.3541	3.5109	30.7386**	15.1202	-2.7570	4.3287**
	(-1.04)	(0.03)	(-0.71)	(0.66)	(3.34)	(0.89)	(-0.39)	
Portfolio 3	-3.7049	0.3448	-4.3434	1.4840	-7.9784	-9.1273	9.7713	2.1934
	(-0.95)	(0.10)	(-0.50)	(0.47)	(-0.72)	(-0.97)	(1.73)	
Portfolio 4	4.6888	-2.8040	8.5113	-0.7793	-22.6251**	-4.3290	2.6478	1.9133
	(0.97)	(-0.95)	(0.64)	(-0.16)	(-2.31)	(-0.26)	(0.44)	
Portfolio 5	0.0666	1.5256	29.3559	-2.2272	-33.3350**	4.5487	-7.1107	4.4795**
	(0.01)	(0.33)	(1.64)	(-0.49)	(-2.58)	(0.15)	(-0.64)	

Panel B: The three-factor model

	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	Taiwan	Thai	F-statistic
				Country				
Nominal Interest Rate								
Portfolio 1	11.4936**	-3.2613	-7.0849	-2.2979	-6.8866	-9.5830	-2.5562	4.0460**
	(2.20)	(-0.49)	(-0.91)	(-0.94)	(-0.72)	(-0.85)	(-0.53)	
Portfolio 2	-8.7389	1.9644	5.2498	2.5167	23.1967**	2.7161	-4.3858	4.3845**
	(-1.44)	(0.30)	(0.67)	(0.56)	(2.46)	(0.23)	(-0.96)	
Portfolio 3	-6.6764	-8.0078	-0.1849	2.0909	-15.8890	-3.4464	12.8684**	4.6324**
	(-1.25)	(-1.21)	(-0.02)	(0.67)	(-1.35)	(-0.31)	(2.16)	
Portfolio 4	5.9700	5.9866	-5.1380	0.2083	-3.0654	-2.4684	4.3260	0.5331
	(1.10)	(1.02)	(-0.58)	(0.06)	(-0.36)	(-0.23)	(0.81)	
Portfolio 5	-2.0484	3.3181	7.1580	-2.5180	2.6442	12.7818	-10.2523**	2.5190
	(-0.47)	(0.54)	(0.79)	(-0.69)	(0.32)	(0.90)	(-1.97)	
Real Interest Rate								
Portfolio 1	5.2769	0.3893	-6.7085	-2.3277	-6.3228	-9.1263	-1.4612	1.6910
	(1.32)	(0.12)	(-0.87)	(-0.94)	(-0.65)	(-1.00)	(-0.31)	
Portfolio 2	-4.4010	0.2627	5.0395	2.7188	22.4371**	14.4040	-5.0002	3.5821
	(-0.96)	(0.08)	(0.65)	(0.60)	(2.34)	(1.54)	(-1.10)	
Portfolio 3	-2.8917	-0.0457	1.1759	1.8829	-14.9304	-9.1946	11.5857	3.8542**
	(-0.72)	(-0.01)	(0.16)	(0.60)	(-1.27)	(-1.00)	(1.94)	
Portfolio 4	4.8347	-2.3371	-5.4330	0.1795	-4.0349	-4.1264	4.8131	0.5196
	(1.21)	(-0.81)	(-0.63)	(0.05)	(-0.47)	(-0.46)	(0.92)	
Portfolio 5	-2.8190	1.7308	5.9262	-2.4536	2.8510	8.0434	-9.9375	2.1483
	(-0.85)	(0.57)	(0.67)	(-0.67)	(0.34)	(0.69)	(-1.92)	
Inflation Rate								
Portfolio 1	5.2947	0.4055	-6.5406	-2.4141	-6.4581	-9.0485	-0.6375	1.6303
	(1.28)	(0.13)	(-0.85)	(-0.96)	(-0.67)	(-0.99)	(-0.14)	
Portfolio 2	-4.3774	0.0708	4.7605	3.0472	22.7043**	14.4573	-5.0161	3.6679
	(-0.92)	(0.02)	(0.62)	(0.66)	(2.37)	(1.54)	(-1.11)	
Portfolio 3	-3.1956	-0.1036	0.5315	1.5142	-15.9779	-9.2963	11.4152	4.1264**
	(-0.77)	(-0.03)	(0.07)	(0.47)	(-1.36)	(-1.00)	(1.94)	
Portfolio 4	5.2922	-2.0192	-4.9718	-0.2643	-3.3040	-4.3080	4.2186	0.5174
	(1.27)	(-0.76)	(-0.57)	(-0.07)	(-0.39)	(-0.48)	(0.81)	
Portfolio 5	-3.0139	1.6465	6.2203	-1.8830	3.0357	8.1955	-9.9802	2.1742
	(-0.88)	(0.59)	(0.70)	(-0.51)	(0.36)	(0.69)	(-1.95)	

** Significant at the 95% confidence level, t-statistics is shown in the parenthesis.

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