

## **The Impacts of Political Events on Foreign Institutional Investors and Stock Returns: Emerging Market Evidence from Taiwan**

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### **ABSTRACT**

This study investigates the possible impact of various political events on Taiwan's stock performance. When market-adjusted techniques are applied, seemingly Taiwan's stock market often reacts to the occurrences of political incidents with a significant abnormal price performance. Nevertheless, after employing an MVRM framework that accounts for market risk differences across firms and for distributional tendencies in daily returns, we find that price reactions to most of the political events are rather insignificant, implying those events be largely uninformative with only a few exceptions. The abnormal return behaviors are also frequently comparable between firms with small- and large foreign institutional ownerships. Some considerable volatility shifts in portfolio returns, however, are observed after specific events occur.

*JEL: F21; F30; G15*

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## I. INTRODUCTION

The purpose of this paper is to examine the impact of political events on the stock performance for Taiwanese firms with different Qualified Foreign Institution Investors (QFII) ownerships. QFIIs' importance have been steadily rising in Taiwan's equity markets after a series of internationalization and institutionalization progress since 1983, and their influence may become even stronger now that Taiwan has been successfully granted membership in the World Trade Organization (WTO) on January 1, 2002. According to the Political Risk Services' International Country Risk Guide (ICRG), over the past decade, along with the gradual opening of capital markets in developing countries, investments into emerging markets totaled more than US\$1.5 trillion; but they were exposed to considerable greater degrees of political risks in comparison with developed markets. Although there have been several studies that examine the impact of political risk on stock prices (e.g., Kim and Mei, 2002; Bilson, Brailsford and Hooper, 2002), there is still a paucity of research on the impact of political events on the behavior of foreign investors in an emerging equity market.

Investors and researchers view political risk as an influential factor in asset pricing. In this study, political risk refers to the uncertainty that arise from incidents that have strong political implications, and such events include elections, governmental policy changes, catastrophes, and domestic/international conflicts which can materially affect security prices.<sup>1</sup> With a general belief that institutional investors are relatively more rational, cool-headed and/or better informed (Lakonishok, Shleifer and Vishny, 1992; Brennan and Cao, 1997), it is interesting to see if these QFIIs exert their market stabilization influence under unforeseen, sudden market shocks such as political turmoil or if they instead abide by the herding instinct and follow rumors just as individual investors do.

QFIIs are not always welcome by developing countries. For example, they have been often blamed for one of the major causes of the 1997 Asian financial crisis, and existing research works call for stricter regulation of international capital flows in emerging markets (Radelet, 1998). Based on the presumption that QFIIs could have a certain edge in information collection and market prediction abilities, their trading behaviors is likely to cause a signaling or information spillover effect to the whole market before the announcement or occurrence of an unanticipated event. Given the possibility that QFIIs aggressively trade and destabilize security prices when facing market uncertainty, an emerging economy opens her capital market to foreign institutional investors may not turn out to be as constructive to the economy itself as originally projected; or even worse, such an opening may become destructive instead. If QFIIs' trading behaviors do play an important role in affecting an emerging stock market, firms with relatively high- and low-QFII stakes should perform differently when an "informational" political event occurs.

Our empirical work particularly focuses on QFII activities in Taiwan's equity market, and this is for two main reasons. 1) Politically, since 1990s Taiwan has been rapidly reforming her political system from the one-party regime to the "multi-party, free-election" model. However, Taiwan's political reform is mixed with her pro-independence (from China) movement, growingly making her a political and

military target of Mainland China, who has ever been claiming the sovereignty of Taiwan's territory and planning for cross-strait reunification. Taiwan's political environment is therefore very unique with abundant dramatic events in our sample period. 2) Economically, since 1990s Taiwan has also begun to open her equity market to QFIIs, whose market share grows at an increasing speed. So in the absence of research in the area of political shocks, the main purposes of this study are to test: (1) whether or not Taiwan's stock market reacts efficiently to the occurrence of political events, and (2) whether or not the trading behaviors of foreign institutional investors significantly differ from those of the local individual investors around the events. Such empirical evidence can provide useful information for government policymakers and individual investors to better understand the political risk and QFIIs' trading behaviors in Taiwan and other emerging markets.

The rest of this paper is organized as follows. Section II reviews the recent literature on the effect of foreign investment on domestic stock markets and its relation to political events. Section III briefly reviews QFII regulation developments in Taiwan and the major political events during the sample period. The data and methodology are described in Section IV. Section V presents Empirical results, and Section VI concludes.

## II. LITERATURE REVIEW

### A. The Association between Political Risk and Stock Returns

The occurrences of major political events signal potential shift in national policy or uncertainty in society development, so they can presumably cause market-wide valuation influence. Nevertheless, most of existing studies focus on effect of economic events on stock prices and there has been far fewer empirical works that examine the impact of political events on the stock markets. Niederhoffer, Gibbs and Bullock (1970), Peel and Pope (1983) and Gemmill (1992) examine the stock price behaviors during governmental and/or congressional elections in various developed countries, and they find some inefficiency in share prices around the time of elections, implying a profitable trading rule. They argue that changes in government administration caused by elections tend to affect financial policies or legislation, thereby significantly affecting stock prices. On the other hand, Cutler, Poterba and Summers (1989) examine the impact of various political events on stock prices, but find no evidence of significant impact of non-economic events on U.S. stock market performance.

In emerging markets, both Chan and Wei (1996) and Kim and Mei (2001) document that political news substantially increase stock volatility in Hong Kong. Bilson, Brailsford, and Hooper (2002), utilizing the Political Risk Services' International Country Risk Guide (ICRG) as the political risks proxies, report that political risk tend to be far more prevalent in emerging markets (especially those in the Pacific Basin), than in the developed markets. Ma, Sun, and Tang (2003) use the Tiananmen-Square Bloodshed to examine the effect of unexpected political event on the share prices of U.S. firms with joint ventures in Mainland China. Their results show that the incident indeed had a significant impact on U.S. firms with joint ventures in

China, and the U.S. stock market reacted efficiently to both the high- and low-degree of risk exposure of the joint ventures located in different locations in China. On the other hand, according to the ICRG, Taiwan is highly sensitive to international political and economic climate due to her export-oriented economy and uneasy political relationship with Mainland China; yet so far we have found few existing published studies that investigate the valuation impact of political events on Taiwan's equity market.

### **B. QFII Development in Taiwan and Door-Opening Effect on Equity Market**

Li (2002) summarizes the opening developments in Taiwan's stock market. Back in the early 1990s, small individual investors held approximately 95% of Taiwan's firm equities.<sup>2</sup> Efforts to induce institutional investors, including opening the stock market to foreigners, have led to the proportion of institutional equity holdings increasing from only 0.1% in 1970 to nearly 20% in 2001. Unlike most of the other Far Eastern countries or regions, Taiwan kept a much tighter governmental control on the financial deregulation process, and the government has been very cautious about QFIIs' market entry status during the capital market reforms.<sup>3</sup> Since the early 1980s, Taiwan's liberalization in the financial sector took place as a process of gradual change and proceeded in three stages, based on the "Plan of the three stages of Foreign Investment" proposed by the Ministry of Finance and approved by the Executive Parliament in 1982. As a part of the Stage I liberation, beginning in 1983, foreigners were first allowed to indirectly own Taiwan's equity assets through investment fund, that is, via the purchase of beneficial certificates.<sup>4</sup> Beginning in June 1989, foreign security brokers were licensed to operate in Taiwan's local market.

Stage II began in December 1990, and in this stage direct investment by QFIIs in Taiwan's securities is legalized. Finally in Stage III, which took effect in March 1996, the government allowed not only QFIIs but also all foreign natural persons to directly purchase Taiwan's securities. Foreign investors used to be prohibited from owning more than 50 percents of a Taiwanese company's total issued and outstanding shares, either individually or in the aggregate with other foreign investors. But effective on December 30, 2000, the percentage caps on foreign ownership of most Taiwanese securities have been eliminated.<sup>5</sup> According to the Taiwan Economic News ("Foreign Investors Playing Bigger Role on Taiwan Stock Market", published on October 21, 2001), the number of registered QFIIs increased to more than six hundred and twenty by the end of 2001. Although the overall QFII trading value only accounts for approximately 5.5% of the whole TSE trading value during the sample period, Yang (2002) argues that in Taiwan the actual influence exerted by QFIIs is far greater than their proportion of ownership holdings.

Besides Taiwan, there have been no fewer than twenty-five emerging markets that are open to foreign institutional investors by the year of 2001 (Li, 2002). However, empirical evidence on the economic influence of foreign institutional investors on equity market is still mixed and controversial. Financial reforms, including liberalization and deregulation of domestic security markets, presumably enhance free-market competition and thus stimulate the market development and growth. Todaro (1994) considers "liberalization and privatization have been widely hailed as

important elements in proper strategy to achieve stronger economic growth.” His argument is partially supported by Bekaert and Harvey (1997) and Choe, Kho, and Stulz (1999) who find that opening a stock market to QFIIs does not drive up emerging market volatility, and by Henry (2000) who documents the positive correlation between market liberalization progress and market value appreciation. But on the other side of the debate, QFIIs have been blamed for the lack of long-term commitment to a developing country’s local economic development, therefore making emerging markets more volatile and vulnerable to international capital flights and speculations. Also, QFIIs dissenters claim that the economic or political uncertainty overseas could easily affect home economy after opening equity market to QFIIs, reducing an emerging market’s “autonomy” and “immunity”. In the recent Mexican and Asian currency crises, foreign capital reportedly quit as quickly as they come, causing chain effects and leaving the emerging markets in total disorders. The speculative attacks led by QFIIs also indicate the weakness of a developing open economy. For example, QFIIs are believed to pursue “positive feedback” investment strategies, which can cause the stock market to overreact to the changes in equity intrinsic values.<sup>6</sup> Several existing studies (Tesar and Werner, 1995; Brennan and Cao, 1997; Froot, O’Connell, and Seasholes, 2001) find that QFIIs pursue positive feedback strategies, with no supporting evidence for QFIIs’ stabilization impact on stock prices.

In addition, Kawakatsu and Morey (1999) find that liberalization does not improve efficiency in emerging markets. The linkage of QFIIs to increased market volatility is not strongly supported by existing empirical studies (e.g., Kim and Singal, 2000). Furthermore, Kwan and Reyes (1997) observe that liberalization measures appear to have significantly decreased the volatility in Taiwan’s stock market. Nevertheless, Wang and Shen (1999) report that foreign investment significantly increases the volatility of currency exchange rate in Taiwan, but its effects on stock returns are rather insignificant. Lin and Shiu (2003) find that foreign investors hold relatively greater ownerships in those Taiwanese firms with large market capitalization, low book-to-market ratios, high export ratios, high betas (especially for small firms) and low dividend yields, and they suggest that foreign investors’ preference could be attributed to the differentials in exposures to informational asymmetries, investment barriers and/or tax statuses. Our study aims to extend previous works by associating QFII ownership levels with Taiwanese firms’ political risk exposure, e.g., their stock price reactions to the occurrence of specific political events.

### **III. MAJOR POLITICAL EVENTS RELATED TO TAIWAN DURING 1996-2002**

Table 1 lists some of Taiwan’s most noteworthy political events occurred during 1996-2001, and our study explicitly examine the price reactions of Taiwan’s equity market to their occurrences. We identify the event dates by searching the news columns in three major Taiwanese newspapers (Liberty Times, China Times, and United Daily News). The tension between Taiwan and Mainland China has always been the most important political factor affecting Taiwan’s stock prices. Therefore, the first tension to be examined is that Mainland China (PRC), in an attempt to influence the outcome of

**Table 1**  
The selected political events from 1996 to 2002 related to Taiwan

<b>Event</b>	<b>Occurrence Date</b>	<b>Event Date <math>t = 0</math></b>	<b>Event Descriptions</b>
I	February 6, 1996	February 6, 1996	Mainland China announced her military exercise plans around the Taiwan Strait, causing an invasion alarm to Taiwan.
II	March 23, 1996	March 25, 1996	Mr. Tung-Hui Lee was elected President of Republic of China (Taiwan) in Taiwan's first free election.
III	July 9, 1999	July 9, 1999	President Tung-Hui Lee announced his proposal of "Special State-to-State Relationship" between Taiwan and Mainland China.
IV	September 21, 1999	September 27, 1999	A powerful earthquake hit Taiwan and caused huge casualties and property losses. The government tried her best to clam down the upset people.
V	March 18, 2000	March 20, 2000	Mr. Shui-Bian Chen from the opposition party (the pro-independence DDP) was elected President.
VI	September 30, 2000	September 30, 2000	The plan to build the No. 4 Nuclear Power Plant in Taiwan was halted by the government.
VII	September 11, 2001	September 13, 2001	The international terrorists launched a series of suicidal attacks on the American homeland. Taiwan's stock market was closed on the news.
VIII	December 1, 2001	December 3, 2001	The new legislature election made President Chen's party (DDP) the largest party in Taiwan's congress.
IX	March 29, 2002	March 29, 2002	Taiwan's government lifted the ban on corporate investments in building 8-inch wafer plants in Mainland China.

Note: In this table the occurrence (calendar) date is not necessarily the event (trading) date  $t = 0$ . For some of the selected events, the occurrence date may be a holiday or the market was shut down due to the event. In such case, the event date  $t = 0$  is defined as the first market opening day after the occurrence date.

Taiwan (Republic of China, or ROC)'s first presidential free election, officially announced on February 6, 1996 the plan of a series of military maneuvers, including ballistic missile test fires, near the Taiwan Strait (Event I, in calendar sequence).<sup>7</sup> The news caused a "war alarm" that shocked the whole Taiwan Island and triggered a panic selling in her equity market. Taiwan's presidential election was then still held as scheduled on Saturday, March 23, 1996, during which Mr. Tung-Hui Lee, the former ROC president who had been progressively confronting Mainland China's cross-strait reunification proposal, was elected by a wide margin (Event II).<sup>8</sup> The second round of cross-strait tension events occurred in July 9, 1999, when President Lee announced his proposal of a "Special State-to-State Relationship" with Mainland China in a Deutsche

Welle interview, signaling his intention of pushing forward Taiwan's independence from China (Event III). Mistrusts and hostilities with Mainland China was quickly mounting to an unprecedented level, and Chinese government even intimidated to launch another round of military exercises around Taiwan. On March 18, 2000, Taiwan held her second presidential election. In a tight three-way race, Mr. Shui-Bian Chen, the nominee from the pro-independent Democratic Progressive Party (DPP), won the election by a small margin (Event V). The outcome surprised many Taiwanese people and Mainland China, as this was the first time in Taiwan's history that an opposition party leader had ever won the presidency by official election. We thus expect that significant stock market reactions should be observed surrounding the Election Day.

Besides the presidential elections, some other election-related political events are also considered as influential to Taiwan's stock market. One instance is Taiwan's legislature election held on December 1, 2001 made DPP the largest party in the congress (Event VIII), providing President Chen with unprecedented (but still insufficient) power support to implement his announced "political reform" agenda. On the other hand, as the economic ties consistently grow stronger between Taiwan and the Mainland, the cross-strait political atmosphere is not always tense. One sign of reconciliation is that the Taiwan's government, after lengthy hot debates, announced on March 29, 2002 "the Policy Guidelines for Investment in Wafer Plants on the Mainland," and "the Implementation Plan with Supporting Measures for Investment in Wafer Plants on the Mainland" (Event IX). Such new official policies effectively deregulated Taiwanese investments in building 8-inch-or-smaller-size wafer plants in Mainland China, and were thus considered by the business society across the strait as a significant breakthrough in tightening the cross-strait economic relationship and benefiting both sides. We thus expect that significant stock gains should be observed surrounding this new policy announcement.

During the past few years, while the headline of Taiwan's major public media has often been dominated by the cross-strait political and economic relationships, the important domestic issues also emerge into the public focus with strong political implications. 1) In the early morning of September 21, 1999, an unprecedented strong earthquake strokes the central Taiwan, causing tremendous casualties and property losses (Event IV). Taiwan's stock market was forced to remain closed for one week; while the government put her full efforts to maintain social orders and resume the people's confidence, and the Public Medias strongly blamed the government for bureaucratic inefficiency in rescue and rebuilding. 2) On September 30, 2000, Taiwan's Minister of Economic Affairs proposed to the Executive Parliament for halting the construction of the 4th Nuclear Power Plant in the island (Event VI). The halt of the new nuclear power plant construction raised Public Medias' strong concerns about Taiwan's future power shortage problems and investors' confidence impairment,<sup>9</sup> and Taiwan's stock market index plummeted by 247 points on the same day. 3) On September 11, 2001, the series of terrorist suicidal attacks shocked not only the U.S. but also the rest of the world, including Taiwan's stock market (Event VII). The TSE was closed on September 12 due to the tragic event and was reopened on the following day. Public Medias expressed deep concerns about chaos within Taiwan's American ally, potential similar terrorist attacks on Taiwan, or even possible invasion by Mainland

China which might exploit such an opportunity, and these presumably add more weights to the market panic.

#### IV. DATA AND METHODOLOGY

##### A. Data

In order to study the trading behavior of QFIIs around the occurrence of political events, we first calculate the average proportion of shares outstanding held by QFIIs during the January 1996 - June 2002 period for all firms that were listed on the Taiwan Stock Exchange (TSE). Firms listed on the over-the-counter market are excluded. Next, corresponding to TSE's industry classification, we sort out the five industries with the highest QFII ownership. These five industries are electronics, transportation, department stores, machinery, and "others" (non-categorized). The top ten firms with the highest QFII ownership in each of these five industries are then selected, and the high-QFII-ownership portfolio finally includes 50 firms. We also sort out the five industries with the lowest QFII ownership, which are construction, steel, textiles, chemical, and electric appliance. The top ten firms with the lowest QFII holding in their industry are selected into the low-QFII-ownership portfolio.

Our final sample therefore consists of a total of 100 firms, which are listed on the TSE and evenly divided into two subgroups with different QFII ownership proportions. Our data source is the Taiwan Economic Journal database (TEJ), in which we retrieve each sample firm's specific monthly QFII ownership proportions, its corresponding daily price returns and market capitalizations, and the daily returns for the whole TSE stock market (the "Taiwan Weighted Stock Index"). Table 2 summarizes the daily returns, average QFII percentages and market risk coefficients for high- and low-QFII portfolios from January 1996 through June 2002. The QFII percentage holdings average 6.89% for the high-QFII group and merely 0.14% for the low-QFII group. Nonetheless, the average market risk (beta) estimates for these two portfolios are 0.828 and 0.816, respectively, with neither being significantly from unity (i.e., the market index beta).

**Table 2**  
Summary statistics of the average daily returns for high and low  
QFII-holding firms during January 1996 - June 2002

	High-QFII Portfolio	Low-QFII Portfolio
Mean Return	-0.003%	-0.083%
Maximum Return	0.273%	0.085%
Minimum Return	-0.302%	-0.278%
Standard Deviation in Returns	0.115%	0.092%
Average QFII Holding Percentage	6.890%	0.140%
Market Risk (Beta Coefficient)	0.828 (1.395)	0.816 (1.628)

Note: The market risk coefficients correspond to the Taiwan Weighted Stock Index. In parentheses are *t*-statistics from testing the null hypothesis that portfolio beta equals unity.



### B. Estimation Methodology

We use two methodologies to investigate the difference of impacts of political events on our two groups of stock portfolios. As the market risk coefficients of both portfolios are not significantly different from that of the Taiwan Weighted Stock Index (see Table 2), we first employ the market-adjusted technique to examine the abnormal returns around the occurrence of political events. Specifically, we measure the daily stock return as:

$$R_{it} = \ln P_{it} - \ln P_{it-1} \quad (1)$$

$$AR_{it} = R_{it} - RM_t \quad (2)$$

where  $P_{it}$  is stock  $i$ 's closing price on day  $t$ ,  $R_{it}$  is the natural logarithm form of return for stock  $i$  on day  $t$ ,  $AR_{it}$  is the abnormal return of stock  $i$  on day  $t$ , and  $RM_t$  is the market index return on day  $t$ .  $AR_{it}$  measures the high- or low-QFII holding firm's equity return after adjusting for Taiwan's market movement, and  $RM_t$  employs the return on the Taiwan Weighted Stock Index as a proxy. In case that an event occurs after the market closes or over the weekend, we use the following trading day as the event date  $t = 0$ . The estimation period consist of 30 trading days prior to and 30 trading days after after each event window, whose range covers between  $t = -5$  and  $t = +5$  surrounding the corresponding announcement.

The robustness of test results based on the above market-adjusted event-study methodology, however, still depends on additional assumptions: the residuals are normally distributed, uncorrelated with the explanatory variables, and independent across firms. Existing evidence indicates that such assumptions might not hold in the real world due to problems that include non-synchronous trading, calendar/industry clustering and time-varying volatility in asset returns. For example, Reyes (1999) reports that the Ordinary-Least-Squares (OLS)-based regression estimates, ignoring conditional heteroscedasticity, could bias the abnormal returns of small and large firms. To minimize potential statistical problems and estimate abnormal returns efficiently, in the second part of analysis we employ a Multivariate Regression Model (MVRM) that is built upon a system of portfolio return equations for multiple event announcements.<sup>10</sup> This MVRM framework has been used in various empirical works to examine the stock price reactions to new policy announcements, deregulation legislations and political/economic crises (e.g., Cornett and Tehranian, 1990; Wagster, 1996; Bin, Blenman and Chen, 2004).

Parameters for the abnormal returns are generated from the following multivariate regression and are regressed jointly for high- and low-QFII holding stock portfolios:

$$R_{jt} = \alpha_j + \beta_{j1}RM_{t-1} + \beta_{j2}RM_t + \beta_{j3}RM_{t+1} + \sum_{k=1}^9 \gamma_{jk}D_{kt} + \varepsilon_{jt} \quad (3)$$

where  $R_{jt}$  is the portfolio return  $j$  (high- or low-QFII-holding stock portfolio) on day  $t$ ,  $RM_t$  is the return on the Taiwan Weighted Stock Index on day  $t$ , lead and lag market returns  $RM_{t-1}$ ,  $RM_{t+1}$  are added as explanatory variables to deal with return distributional problems associated with nonsynchronous trading,  $D_{kt}$  is the dummy variable that captures the impact of event  $k$  on portfolio return and equals 1 if day  $t$  is within the event window period and 0 otherwise, and  $\varepsilon_{jt}$  is an error term that is modeled in a “Generalized Autoregressive Conditional Heteroscedasticity” (GARCH) framework that controls for possible time-varying volatility of daily returns for portfolio  $j$ :

$$\varepsilon_{jt} \sim N(0, h_{jt}^2), \text{ where } h_{jt}^2 = \phi_{j0} + \phi_{j1} h_{jt-1}^2 + \phi_{j2} \varepsilon_{jt-1}^2. \quad (4)$$

Using daily returns series over 60 trading days surrounding the event window, we apply the GARCH (1, 1) process to Equation (3) for each sub-portfolio respectively, and compute a covariance matrix of GARCH residuals that fit Equation (4). Next, to adjust for cross-section dependence of the disturbances, the Seemingly Unrelated Regression (SUR) methodology is employed to jointly estimate the abnormal performance of the two sub-portfolios as an interrelated system, and then test the following null hypotheses:

Hypothesis 1:  $\gamma_{jk} = 0 \quad \forall j$ ; the abnormal return for each high- or low-QFII holding stock portfolio equals zero for Event  $k$ .

Hypothesis 2:  $\gamma_{ik} = \gamma_{jk} \quad \forall i, j (i \neq j)$ ; each of the nine events yields the same valuation impact on both high- and low-QFII holding stock portfolios.

## V. EMPIRICAL RESULTS

### A. Event Studies based on the Market Adjusted Model

Regression results of the market-adjusted model are presented in Panels A through C of Table 3, given the assumptions of asset return normality and market risk uniformity. The valuation effects of Event I (the Taiwan Strait missile crisis) on the high-QFII-holding portfolio are statistically insignificant for the trading days of pre-event week, the trading days of post-event week, or the event date  $t = 0$ . On the other hand, the low-QFII portfolio shows some significant (at the 0.05-0.10 level) daily price reactions before and after Mainland China’s official announcement of ballistic missile tests, with the sign of these significant daily AR shifting (e.g., -0.43 percent for Day  $t = -1$ , and +0.91 percent for Day  $t = +1$ ).

**Table 3**  
Daily Abnormal Returns and Cumulative Abnormal Returns around Event dates

Date	I. The Taiwan Strait Missile Crisis (February 6, 1996)			II. The 1 <sup>st</sup> Presidential Election (March 23, 1996)			III. "Special State-to-State Relationship" Announcement (July 9, 1999)		
	High	Low	$\mu_H = \mu_L$	High	Low	$\mu_H = \mu_L$	High	Low	$\mu_H = \mu_L$
-5	0.05%	0.00%	0.05%	-0.06%	-0.33%**	0.27%	1.22%*	2.45%*	-1.23% <sup>+</sup>
-4	0.00%	-0.48%**	0.48% <sup>+</sup>	-0.27%*	-0.45%**	0.18%	2.65%*	3.35%*	-0.70%*
-3	-0.13%	0.19%	-0.32%	-0.07%	0.28%	-0.35%	0.22%	-0.05%	0.27%
-2	0.15%	0.43%*	-0.28%	-0.20%	0.07%	-0.27%	-0.77%**	-0.59%**	-0.18%
-1	-0.24%	-0.43%**	0.19%	-0.33%**	-0.87%**	0.54%	-0.89%**	-1.44%*	0.55%
0	<b>0.21%</b>	<b>0.24%</b>	<b>-0.03%</b>	<b>0.59%*</b>	<b>-0.59%*</b>	<b>1.18%</b>	<b>0.61%<sup>+</sup></b>	<b>0.61%<sup>+</sup></b>	<b>0.00%</b>
+1	-0.32%	0.91%*	-1.23%*	0.12%	0.52% <sup>+</sup>	-0.40%	-0.22%	0.05%	-0.27%
+2	0.12%	-0.53%*	0.65%*	0.33%	0.60%*	-0.27%	0.40%	0.56%	-0.16%
+3	-0.14%	0.33%	-0.47%**	0.48%*	0.98%*	-0.50%	0.19%	1.01%*	-0.82% <sup>+</sup>
+4	0.23%	0.34%*	-0.11%	-0.23%	0.66%**	-0.89%	-0.49%	-0.56%**	0.07%
+5	-0.26%	0.20%	-0.46%*	-0.02%	0.29%	-0.31%	0.59%*	1.29%*	-0.70% <sup>+</sup>
(-3, -1)	-0.23%	0.18%		-0.60%*	-1.44%*		-1.44%*	-2.08%*	
(-1, +1)	-0.36%	0.72%**		0.38%	-0.50%		-0.50%	-0.79%	
(0, +2)	0.01%	0.63%**		1.04%**	0.79%		0.79%	1.21%*	

Note: Coefficients are OLS estimates of abnormal returns based on the market-adjusted model.

+ Significant at the 0.10 level. \*\* Significant at the 0.05 level. \* Significant at the 0.01 level.

Table 3 (continued)

Panel B		IV. Earthquake at the Central Taiwan (September 21, 1999)			V. The 2 <sup>nd</sup> Presidential Election (March 18, 2000)			VI. The Halt to build Nuclear Power Plant No.4 (September 30, 2000)		
Date		High	Low	$\mu_H = \mu_L$	High	Low	$\mu_H = \mu_L$	High	Low	$\mu_H = \mu_L$
-5		-0.03%	0.13%	-0.16%	0.35% <sup>+</sup>	1.00%**	-0.65%	-1.31%*	-2.89%*	1.58%*
-4		-0.39%*	-1.03%*	0.64%	-1.72%*	-2.77%*	1.05%	-2.18%*	-3.12%*	0.94%**
-3		1.49%*	1.08%*	0.41%	0.54%	-0.09%	0.63%	-1.90%*	-2.74%*	0.84% <sup>+</sup>
-2		3.71%*	3.33%*	0.38%	-0.37%	-1.77%*	1.40%*	-1.67%*	-2.49%*	0.82%
-1		-2.07%*	-1.94%*	-0.13%	-0.27%	-0.67%**	0.40%	0.48%	-0.03%	0.51%
0		<b>0.04%</b>	<b>0.28%</b>	<b>-0.24%</b>	<b>0.65%</b> <sup>+</sup>	<b>0.36%</b>	<b>0.29%</b>	<b>0.19%</b>	<b>0.42%**</b>	<b>-0.23%</b>
+1		-2.39%*	-3.15%*	0.76%	0.75%*	0.58%**	0.17%	0.14%	0.13%	0.01%
+2		1.34%*	0.12%	1.22%	1.09%**	1.17%**	-0.08%	-0.15%	-0.48%**	0.33%
+3		2.04%*	1.68%*	0.36%	0.06%	0.16%	-0.10%	0.08%	-0.16%	0.24%
+4		2.74%*	1.17%*	1.57%	-0.44%	-0.26%	-0.18%	-1.78%*	-2.89%*	1.11% <sup>+</sup>
+5		2.99%*	2.77%*	0.22%	-2.48%*	-2.97%**	0.49%	-0.46%	-2.80%*	2.34%*
(-3,-1)		3.14%*	2.46%*		-0.11%	-2.53%*		-3.09%*	-5.26%*	
(-1,+1)		-4.41%*	-4.81%*		1.13%*	0.27%		0.81%	0.52%	
(0,+2)		-1.00%	-2.75%*		2.50%*	2.11%*		0.18%	0.07%	

Table 3 (continued)

## Panel C

Date	VII. Terrorism attack on the U.S.A. (September 11, 2001)			VIII. Legislature Election (December 1, 2001)			IX. Deregulation of Transferring 8-inch Wafer Productions to Mainland China (March 29, 2002)		
	High	Low	$\mu_H = \mu_L$	High	Low	$\mu_H = \mu_L$	High	Low	$\mu_H = \mu_L$
-5	-0.45%	-0.69% <sup>+</sup>	0.24%	-0.69% <sup>+</sup>	-1.95%*	1.26%**	0.42%	1.46%*	-1.04%**
-4	0.55% <sup>+</sup>	-0.77% <sup>+</sup>	1.32%	-0.77% <sup>+</sup>	-0.48%	-0.29%	1.59%*	3.57%*	-1.98%*
-3	0.57%	0.75%**	-0.18%	0.75%**	0.28%	0.47%	1.75%*	3.17%*	-1.42%**
-2	-0.80%**	-0.76% <sup>+</sup>	-0.04%	-0.76% <sup>+</sup>	-0.11%	-0.65%	-0.08%	3.47%*	-3.55%*
-1	-0.22%	0.68%**	-0.90%	0.68%**	0.68% <sup>+</sup>	0.00%	-2.43%*	-2.10%*	-0.33%
0	<b>0.22%</b>	<b>-1.22%*</b>	<b>1.44%</b>	<b>-1.22%*</b>	<b>-1.70%*</b>	<b>0.48%</b>	<b>-1.20%*</b>	<b>-1.23%**</b>	<b>0.03%</b>
+1	-0.42%	-1.64%*	1.22%	-1.64%*	-1.71%*	0.07%	1.12%**	2.68%*	-1.56%**
+2	0.41%	-1.54%*	1.95%	-1.54%*	-1.48%*	-0.06%	-0.28%	1.14%**	-1.42%**
+3	-1.35%*	-0.21%	-1.14%*	-0.21%	-0.73%**	0.52%	1.90%*	2.67%*	-0.77%
+4	0.12%	0.05%	0.07%	0.05%	1.32%*	-1.27% <sup>+</sup>	1.50%*	4.30%*	-2.80%*
+5	0.46%	4.48%*	-4.02%**	4.48%*	5.75%*	-1.27%**	1.66%*	3.44%*	-1.78%*
(-3,-1)	-0.46%	-0.86%		0.67%	0.85%		-0.76%	4.53%*	
(-1,+1)	-0.42%	-0.59%		-2.18%*	-2.73%*		-2.51%*	-0.64%	
(0,+2)	0.21%	-3.11%*		-4.40%*	-4.89%*		-0.36%	2.59%**	

We next examine the valuation impact of the two presidential elections (Events II and V). During the 3-day window [-3, -1] prior to the first election, both the high- and the low-QFII portfolios show negatively significant CARs. And during the 3-day window [-3, -1] prior to the second election, the two portfolios again show negative ARs (insignificant for the high-QFII portfolio, significant at the 0.01 level for the low-QFII portfolio). The uncertainty in upcoming election results, which infers the uncertainty in the future domestic political climate, leads to market speculations and abnormal price declines, especially for those low-QFII firms that are largely owned by Taiwan's local stockholders. As indicated by the daily AR and CAR for the window [0, +2], however, both high- and low-QFII portfolios show significant price rebounds after the two presidential runs are completed, even though the pro-Taiwan-independence candidate won both elections (Mr. Tung-Hui Lee and Mr. Shui-Bian Chen, respectively). As for the legislature election made President Chen's DDP the largest party (but still not yet the majority party) in Taiwan's multiparty congress (Event VIII), both low- and high-QFII portfolios yield a negatively significant CAR (at the 0.01 level) over the 3-day period [0, +2].

During the 3-day period [-3, -1] before President Lee made his public announcement of "special state-to-state relationship between Taiwan and China" (Event III), both high- and low-QFII portfolios experience a significant value loss (at the 0.01 level). Over the following 3-day period [0, +2], however, both portfolios yield a positive CAR, with the low-QFII portfolio rebounds more significantly (at the 0.10 level).

The two political-economic events examined in this study are the governmental halt of the No. 4 nuclear power plant construction in Taiwan (Event VI), and the deregulation of Taiwanese enterprises' building 8-inch wafer plants in Mainland China (Event IX). Surrounding the announcement of Event VI, in particular over the pre-event window [-3, -1], both sample portfolios suffer considerable value losses (-3.09% and -5.26% for the high- and low-QFII portfolio, respectively, both being significant at the 0.01 level). As for Event IX, the low-QFII firms averagely gain 4.53 percents for the [-3, -1] pre-event window and 2.59 percents for the following 3-day period [0, +2]. Such gains are significant at the 0.01-0.05 levels. In comparison, the high-QFII portfolio yields merely insignificant CARs for both of the time windows (-0.76 percent for [-3, -1] and -0.36 percent for [0, +2]).

The September-21-1999 earthquake (Event IV) not only inflicts huge losses of life and wealth on the Taiwanese people, but also gives Taiwan's government a great political challenge to ease the wounded and shocked society. Investors in Taiwan's stock market certainly did not anticipate the upcoming catastrophe, and we find that during the pre-event window [-3, -1], both high- and low-QFII portfolios yield a positively significant 3-day CAR. But as the earthquake hit the island, the stock market was forced to close and then reopened after a whole week, the 3-day CARs during the period [0, +2] are negative for both stock groups, with the low-QFII-holding portfolio suffering a value loss of 2.75 percents on average (significant at the 0.01 level). Also, the 3-day period [-1, +1] surrounding the event date see a negatively significant CAR (-4.41 percents and -4.81 percents for the high- and low-QFII portfolios, respectively), although the AR on the day  $t = 0$  alone is insignificantly different from zero for both

portfolios. (As the day  $t = 0$  is the first trading day on which the market was reopened one week after the earthquake, the shockwave to the stock market might have decayed considerably by the time.) We also find abnormal returns difference between low- and high-QFII firms is insignificant at the 0.10 level, indicating that the proportion of foreign ownership is immaterial in affecting the stock performance during such a local catastrophe.

The valuation impact of an international catastrophe (Event VII, the U.S. 09-11-2001 tragedy) on Taiwan's stock market is also examined. The TSE was closed for one day and then reopened, and we observe that the sample firms with smaller foreign institutional ownerships averagely suffer a cumulative value loss of 4.02 percents (significant at the 0.01 level) for the  $[0, +2]$  period, while the high-QFII-holding firms do not suffer as much (the 3-day CAR is insignificantly different from zero). During such an international political turmoil, those Taiwanese firms with larger foreign ownerships seem to perform with relatively fewer anomalies based on market-adjusted estimates.

#### **B. Valuation Impact Analysis based on the Risk-Adjusted MVRM**

Next we account for market risk of sample firms and distributional tendencies of daily returns (e.g., non-synchronous trading, clustering and time-varying volatility). In Equation (3), our MVRM framework employs the risk-adjusted model to explain portfolio returns, and applies GARCH-SUR procedures to estimate abnormal performance for the event dates.

For the event day  $[0, 0]$  alone, the respective estimates of  $\phi_0$ ,  $\phi_1$  and  $\phi_2$  in Equation (4) are 0.01, 0.08 and 0.65 for the high-QFII-holding portfolio, 0.01, 0.17 and 0.79 for the low-QFII-holding portfolio (as listed in the last row of Table 4). These estimates are all significant at the 0.01 level,<sup>11</sup> suggesting that conditional heteroskedasticity persist in daily return series and the GARCH method be more efficient to model the error terms. Based on the covariance matrix estimated from the GARCH residuals, SUR is performed to jointly estimate both portfolios' risk-adjusted abnormal returns,  $\gamma_{jk}$ . The GARCH-SUR results for testing Hypothesis 1 ( $\gamma_{jk} = 0 \quad \forall j$ ), whether each specific event might significantly affect the performance of low- and high-QFII-holding firms, are summarized in Panel A of Table 4. The 1st column states each specific event date; the 2nd and 3rd columns report the SUR coefficient and asymptotic t-test statistic corresponding to the abnormal returns for the corresponding event window period.

For the high-foreign-holding portfolio, only Event V (i.e., the 2<sup>nd</sup> presidential free election, an intense race in which the opposition party DPP nominee defeated the ruling party KMT nominees for the first time in Taiwan's political history) is associated with some abnormal returns that are positively significant. For the event date  $[0, 0]$ , AR = 1.27%, significant at the 0.10 level; and during the 3-day period  $[0, +2]$ , AR = 2.19%, significant at the 0.05 level. In addition, only Event VI (i.e., the announced halt to build a new nuclear power plant) is associated with an abnormal return that is negatively significant (during the pre-event 3-day period  $[-3, -1]$ , AR = -2.33%, significant at the

0.05 level). No significant ARs are observed surrounding the occurrence of the remaining seven events.

On the other hand, firms with smaller foreign institutional ownerships averagely also suffer a value loss of  $-1.97\%$  (significant at the 0.05 level) during the 3-day period  $[-3, -1]$  right before Event VI. The halt of the new nuclear power plant construction raised concern about not only Taiwan's future power shortage problems but also investors' confidence, and thus cause stock price declines for Taiwanese firms with either small or large foreign institutional ownerships. Also from the low-QFII portfolio,

**Table 4**  
Tests of hypotheses that the abnormal returns for the two portfolios equal zero surrounding each event date

Event	Window	Panel A. Abnormal Return $\gamma_{jk}$		Panel B. F-value
		High-QFII Portfolio	Low-QFII Portfolio	
I. The Taiwan Strait Missile Crisis (Feb. 6, 1996)	[0, 0]	0.19% (0.62)	0.29% (1.26)	1.39
	[-3, -1]	-0.45% (-0.58)	-0.78% (-1.19)	1.22
	[-1, +1]	-0.95% (-1.37)	-1.22% (-1.46)	0.97
	[0, +2]	0.25% (0.99)	-0.59% (-1.36)	3.03
II. The 1 <sup>st</sup> Presidential Election (Mar. 23, 1996)	[0, 0]	0.62% (1.33)	0.50% (1.04)	0.67
	[-3, -1]	-0.90% (1.29)	-1.12% (1.62)	1.72
	[-1, +1]	-0.62% (-0.92)	-1.20% (-1.45)	1.66
	[0, +2]	0.50% (1.16)	0.29% (0.51)	2.04
III. "Special State-to-State Relationship" Announcement (Jul. 9, 1999)	[0, 0]	-0.10% (-0.37)	-0.49% (-1.25)	4.32*
	[-3, -1]	-0.50% (-1.04)	-1.09% (-1.64)	1.93
	[-1, +1]	0.27% (0.75)	-0.87% (-1.44)	4.53*
	[0, +2]	-0.07% (-0.27)	-0.24% (-0.50)	1.75
IV. 9-21 Earthquake at the Central Taiwan (Sep. 21, 1999)	[0, 0]	0.42% (0.59)	-0.05% (-0.18)	2.54
	[-3, -1]	0.61% (1.58)	0.80% (1.70)	0.77
	[-1, +1]	-1.19% (-1.60)	-0.85% (-0.99)	1.20
	[0, +2]	0.29% (0.65)	0.54% (1.25)	1.73
V. The 2 <sup>nd</sup> Presidential Election (Mar. 18, 2000)	[0, 0]	1.27% (1.94)*	0.75% (1.12)	4.81*
	[-3, -1]	-0.31% (-0.57)	-1.27% (-1.45)	5.08*
	[-1, +1]	0.74% (1.09)	1.09% (1.33)	1.94
	[0, +2]	1.89% (2.21)**	1.25% (1.64)	7.70**

Note: Coefficients are GARCH-SUR estimates based on the risk-adjusted MVRM:

$$R_{jt} = \alpha_j + \beta_{j1}RM_{t-1} + \beta_{j2}RM_t + \beta_{j3}RM_{t+1} + \sum_{k=1}^9 \gamma_{jk}D_{kt} + \varepsilon_{jt}, \text{ where } \varepsilon_{jt} \sim N(0, h_{jt}^2), \text{ and } h_{jt}^2 = \phi_{j0} + \phi_{j1} h_{j,t-1}^2 + \phi_{j2} \varepsilon_{j,t-1}^2.$$

In parentheses are  $t$ -statistics. F-statistics are from testing  $\gamma_{jk} = \gamma_{jk} + \text{Significant at the 0.10 level.}$

\*\* Significant at the 0.05 level. \* Significant at the 0.01 level.



Table 4 (continued)

Event	Window	Panel A. Abnormal Return $\gamma_{jk}$		Panel B. F-value
		High-QFII Portfolio	Low-QFII Portfolio	
	[0, 0]	0.44%	0.61%	1.23
VI. Halt to build Nuclear Power Plant No.4 (Sep. 30, 2000)	[-3, -1]	-2.23%**	-1.97%**	2.34
	[-1, +1]	-1.42%	0.30%	8.28**
	[0, +2]	0.15%	0.56%	1.77
	[0, 0]	-0.40%	-0.20%	0.72
VII. Terrorist attack on the U.S.A. Homeland (Sep. 11, 2001)	[-3, -1]	0.17%	0.12%	0.60
	[-1, +1]	-0.39%	-0.13%	0.92
	[0, +2]	-0.70%	-1.13%	2.11
	[0, 0]	-0.50%	-0.33%	0.95
VIII. Legislative Election (Dec. 1, 2001)	[-3, -1]	-1.03%	-0.65%	1.86
	[-1, +1]	-0.45%	0.04%	2.99
	[0, +2]	-1.22%	-0.98%	1.80
	[0, 0]	0.34%	1.87%*	13.05*
	[-3, -1]	-0.95%	2.61%**	9.06**
IX. Deregulation of building 8-inch Wafer Plant in Mainland China (Mar. 29, 2002)	[-1, +1]	-0.73%	0.25%	4.54*
	[0, +2]	0.56%	0.60%	0.49
	[0, 0]	$\phi_0 = 0.01^*$ $\phi_1 = 0.08^*$ $\phi_2 = 0.65^*$	$\phi_0 = 0.01^*$ $\phi_1 = 0.17^*$ $\phi_2 = 0.79^*$	

we observe some positively significant abnormal returns only surrounding Event IX, i.e., the deregulation on building wafer plants in Mainland China. The cumulative abnormal returns equal 2.61% (significant at the 0.05 level) during the pre-event period [-3, -1]; the value gain is 1.87% (significant at the 0.01 level) for the event date [0, 0] alone. It appears to us that those sample firms with greater QFII ownerships do not react very positively to Taiwan government's new economic deregulation, while firms largely owned by Taiwan's local stockholders exhibit a greater positive abnormal performance. This phenomenon somehow surprises us, as we presume that foreign institutional investors should more strongly welcome the improvements in the cross-strait economic relationship. Our evidence for Event IX, however, fails to support

this presumption. One possible explanation is that QFIIs indeed could have a more realistic understanding for the true economic impact of this deregulation announcement, so they only consider Event IX “neutral” and do not react as passionately as local stockholders.<sup>12</sup> No significant ARs are observed surrounding the occurrence of the remaining events.

Such findings seem rather interesting and even somewhat “against common wisdoms,” as they suggest that firms with larger foreign institutional holdings favor more about Taiwan’s political power shift (Event V), whereas firms with larger domestic ownerships are more excited about Taiwan’s improved economic relationship with Mainland China (Event IX). However, when Taiwan’s internal political power struggles worsen her political/economic relationship with western countries (Event VI), both high- and low-QFII firms suffer considerable value losses.

Among those “insignificant” events, Event I is associated with a gain (+0.25%) for the high-QFII portfolio but a loss (-0.59%) for the low-QFII portfolio during the [0, +2] period. Event III is also associated with a gain (+0.27%) for the high-QFII portfolio but a loss (-0.87%) for the low-QFII portfolio during the [-1, +1] period. It implies that when the cross-strait tension increased in both 1996 and 1999, QFIIs did not take the situation as seriously as Taiwan’s local individual investors.

Compared with the second presidential election (Event V, in which the opposition party DPP leader Mr. Chen won only by a small margin), the first one (Event II) and the legislative election (Event VII) cause far less significant price reactions in Taiwan’s stock market. In 1996, Mr. Lee, who has previously been appointed for president by the ruling party KMT for years, won the first presidential free election by a strong lead; and in 2001, the legislative free election did not result in any majority party in the congress. Neither of these two elections seems to dramatically shift the existing political power balance in Taiwan, therefore neither the high- or low-QFII portfolio reacts significantly in prices, particularly after market risk is adjusted for. For example, during the window [0, +2] corresponding to Event II, the risk-adjusted CAR is 0.50% for the high-QFII portfolio and 0.29% for the low-QFII portfolio. And also during the window [0, +2] for Event VII, the corresponding risk-adjusted CAR is -1.22% and -0.98%, respectively. Such risk-adjusted abnormal performance is not as significant as those market-adjusted estimates in Table 3 (1.04% and 0.79% corresponding to Event II, 4.44% and 4.89% to Event VII).

So far we note that after adjusting for market risk differences across firms and portfolios, plus accounting for possible distribution tendencies in daily returns, most of the abnormal returns around the selected events are merely insignificantly different from zero, regardless of the proportion of foreign institutional holding in Taiwan’s firms. For instance, when we employ the simple market-adjusted model, significant ARs are observed on both high- and low-QFII portfolios during the event day  $t = 0$  for Events II, III and VIII (the first presidential election, the “cross-strait state-to-state relationship” announcement, and the legislature election, correspondingly). But when we employ the risk-adjusted MVRM framework and account for conditional heteroscedasticity and cross-section dependence, neither of the two portfolios shows statistically significant AR for those three event dates. Furthermore, when the pre-, across- and post-event window periods ([-3, -1], [-1, +1] and [0, +2]) are put together for consideration, the

market-adjusted OLS estimates consistently yield significant AR observations on the low- and/or the high-QFII-holding portfolios for each of the nine selected events; that is, no single event is completely irrelevant to both portfolios' price movements. In comparison, the risk-adjusted MVRM estimates yield significant AR results far less frequently, as we observe some occasions of significant AR for merely three (Events V, VI and IX) out of the total nine selected events.

We next attempt to explain the possible reasons for insignificant risk-adjusted MVRM results. 1) As Brown and Warner (1985) and Beneish and Whaley (1996) have suggested, the explanatory power of the risk-adjusted model might be relatively weak when working with daily return data. However, even after we extend the risk-adjusted model to an MVRM (as Equations 3 and 4 illustrate) and control for possible distributional tendencies in daily returns, the insignificance of MVRM estimates still persists. 2) The systematic risk levels might be diffuse across the low-QFII firms, the high-QFII firms and the TSE market index, particularly in cases of finite sample sizes (e.g., merely 50 firms for each sub-sample). So after such differences in market risk across sample firms are adjusted for, the statistical significance for magnitudes of and/or differences in AR means of the two portfolios could be considerably lowered. Consequently, even though the market-adjusted approach captures more "observations of abnormal performance," we still consider the risk-adjusted MVRM estimates to be more reliable and less biased.

Panel B of Table 4 lists asymptotic F-statistics, which result from testing Hypothesis 2:  $\gamma_{ik} = \gamma_{jk}$ , that is, each individual kth event yields the same valuation impact on both high- and low-QFII holding stock portfolios. We find that after adjusting for market risk, the two sub-samples have significantly (at the 0.05 level) different price reactions to some specific incidents. The high-QFII portfolio performs significantly better than does the low-QFII portfolio surrounding the second presidential election (see F-statistics corresponding to Event V during [-3, -1], [0, 0] and [0, +2]). On the other hand, when the nuclear power plant construction is halted or the wafer plant transfer to the mainland is deregulated, the high-QFII portfolio performs significantly worse than does the low-QFII stocks (see F-statistics corresponding to Event VI during [-1, +1] and to Event IX during [-3, -1], [0, 0] and [0, +2]).

### C. Volatility Shift Analysis on Risk-Adjusted Abnormal Returns

Besides estimating and comparing average ARs across high- and low-QFII firms during the event windows, we explore the possible impact of the nine selected events on firm return volatilities. The issue of volatility shifts is also important because of its economic implications for regulatory policy, capital allocation and asset option pricing, etc.

We examine whether there has been any significant change in the variance of either portfolio's risk-adjusted excess returns (GARCH estimates) following the occurrence of each specific event. Due to the distributional tendencies (e.g., significant conditional heteroscedasticity) documented in our risk-adjusted daily returns, we employ Levene's (1960) test, which is relatively more robust to departures from distributional normality. The test statistics for both high- and low-QFII portfolios surrounding all nine events are summarized in Table 5. We find that: 1) for the

high-QFII portfolio, there are observable upward shifts in return volatility (significant at the 0.05-0.10 level) after the occurrences of Events IV (the 9-21 earthquake) and VI (the halt of international joint-venture nuclear power plant construction); 2) for the low-QFII portfolio, the return volatility shifts upwards significantly not only following Events IV and VI, but also following other four Events I (the Taiwan Strait missile crisis), III (the “cross-strait state-to-state relationship” announcement), VII (the 9-11 terrorist attack) and IX (the deregulation of building wafer plants in mainland China). As for the remaining three events, low-QFII firms also experience upward volatility shifts, although those shifts are rather insignificant statistically.

**Table 5**  
Tests of hypotheses that the risk-adjusted returns for the two portfolios have equal variance before and after each event date

Event	Standard Deviation in Risk-Adjusted Daily Returns	
	High-QFII Portfolio	Low-QFII Portfolio
I.	0.49% vs. 0.62% (3.25)	0.54% vs. 0.91% (5.53)**
II.	0.47% vs. 0.54% (0.85)	0.67% vs. 0.73% (1.76)
III.	0.42% vs. 0.56% (2.12)	0.50% vs. 0.76% (4.83) <sup>+</sup>
IV.	0.38% vs. 0.70% (6.37)**	0.45% vs. 0.83% (7.41)**
V.	0.45% vs. 0.40% (1.54)	0.51% vs. 0.66% (3.40)
VI.	0.50% vs. 0.78% (4.84) <sup>+</sup>	0.59% vs. 0.81% (5.19) <sup>+</sup>
VII.	0.56% vs. 0.71% (3.44)	0.63% vs. 1.00% (6.35)**
VIII.	0.48% vs. 0.42% (1.49)	0.53% vs. 0.72% (3.82)
IX.	0.53% vs. 0.62% (2.89)	0.60% vs. 0.87% (4.71) <sup>+</sup>

Note: In parentheses are Levene test statistics.

+ Significant at the 0.10 level. \*\* Significant at the 0.05 level. \* Significant at the 0.01 level.

## V. CONCLUSIONS

This empirical study attempts to 1) estimate the possible valuation impact of various relevant political events on Taiwan’s stock market performance, including abnormal return behaviors and volatility shifts; and 2) investigate the potential role that foreign institutional ownership might play in such stock price reactions. We apply both the market-adjusted event-study approach and the risk-adjusted multivariate regression analysis to examine the price movement patterns of two portfolios of Taiwanese common stocks (50 high-foreign-holding firms vs. 50 low-foreign-holding firms) surrounding the occurrence dates of nine major political incidents as listed in Table 1.

When market risk homogeneity and equity return normality are assumed, our results obtained using the market-adjusted OLS approach may lead us to the conclusion: those events regarding Taiwan’s political elections, economic policies and cross-strait relationship developments are generally associated with considerable abnormal performance in Taiwan’s stock market. Bilson, Brailsford, and Hooper (2002) suggest that equity prices in emerging markets be specifically sensitive to the political risk,

while Chan and Wei (1996) and Kim and Mei (2001) have found supporting evidence in Hong Kong's market. Our market-adjusted OLS estimates of abnormal returns in Taiwan's stock market also seemingly support their findings, as significant ARs are consistently observed surrounding all of the nine events for either high- or low-QFII-holding portfolio (and for both portfolios in some circumstances). That is, all of these nine political events are "informative." Furthermore, the market-adjusted OLS results also suggest to us that between high- and low-QFII firms, their abnormal return behaviors should be significantly different from each other, with the more "domestic" (low-QFII-holding) firms on average experiencing a more observable price reaction to Taiwan's political turmoil.

After relaxing the presumptions of market risk homogeneity and equity return normality, however, we switch to an MVRM as Equations (3) and (4) jointly illustrate. Compared to the market-adjusted approach, this MVRM framework is more sophisticated but also more robust, because it minimizes statistical problems by a) accounting for the difference in market risk across firms, b) adding the led and lag market returns as explanatory variables to deal with nonsynchronous trading errors, and c) employing the GARCH and SUR techniques to control for time-varying volatilities and cross-section dependences. Our results generated using the risk-adjusted MVRM, however, seem to be less "eye-catching." The MVRM estimates of portfolio abnormal returns not only decrease in values but also lose their statistical significance considerably, and most of those nine events turn out to be neutral non-events, that is, disregarded by the investing public. The MVRM results also indicate that for most of the nine political events, the difference in ARs between high- and low-QFII Taiwanese firms is largely negligible, exhibiting a resemblance in pricing behaviors among those firms. Nonetheless, from the risk-adjusted MVRM framework we can still obtain a limited numbers of observable abnormal performances that are significantly different from zero. Specifically, the high-QFII portfolio yields a significant price gain during Taiwan's second presidential free election, although the return volatility remains rather unaffected following the election. Their low-QFII counterparts react positively and significantly to the governmental approval of building high-tech wafer plants in Mainland China, and the return volatility also considerably increases following the deregulation announcement. Moreover, the two portfolios both suffer a significant value loss when Taiwan's government halts an international joint-venture project of building nuclear power plant in the island, and they also both experience an observable upward shift in their return volatilities following that incident.

Our findings can help QFIIs and local stockholders to better understand and evaluate the political risk for investing in Taiwan's equity market. When investing in an emerging market, QFIIs are presumably "global, institutional, and professional" investors who have asymmetry in information access, market analysis, trading techniques and/or capital sources. They might be able to evaluate the emerging market's political risk more objectively and less passionately. If this is the case, we should observe that QFIIs trade their shares more rationally than do local individual stockholders, therefore causing more normal and less volatile stock performance. The evidence compiled from this study suggest that on average, high-QFII-stake firms perform at least no worse than their low-QFII-stake counterparts do when political

events occur, and afterwards their returns appear to be relatively less volatile.

As Taiwan entered the year of 2004, the third presidential election was held on March 20. Never had Taiwan experienced such a power struggle full of controversies and conflicts, and the climax was the mysterious “gunshot wound incident” on Mr. Shui-Bian Chen and his partner on March 19. Mr. Chen won the re-election by a tiny margin on the following day, but the rival candidates and their supporters marched on the street, accusing him of election fraud and conspiracy. So far the political turmoil is still in process, lawsuits have been brought to Taiwan’s supreme court, and our study can be further extended into this dramatic event in the near future.

### ENDNOTES

1. There are various definitions of political risk that might affect investment values. Madura (2000) states that some common forms of political risk include the uncertainty related to attitude of consumers and investors, attitude of the government, blockage of fund and technology transfers, currency inconvertibility, war, bureaucracy and corruption. We believe that the events selected are closely related to potential changes in attitude of consumers, attitude of the government, blockage of fund and technology transfers, bureaucracy, and even war or peace.
2. The corresponding number is 72% in the U.S., 73% in the U.K., and 77% in Japan (see Schwartz and Shapiro, 1992).
3. QFIIs (Qualified Foreign Institutional Investors) refer to foreign banks, insurance companies, securities firms, fund management institutions and other investment institutions that meet the qualifications set by Taiwan Securities and Futures Commission (SFC).
4. At this stage, only foreign institutional investors that have applied for and received approval as qualified foreign institutional investors (QFIIs) are allowed to invest in Taiwan’s security market.
5. However, foreign investment remains prohibited in certain industries such as agriculture, broadcasting, power generation, liquor, and cigarettes.
6. A positive feedback trading strategy is described as buy when prices have increased and sell when they have fallen.
7. This is the so-called “Taiwan Strait missile crisis.” The first day of military exercise was on March 8, 1996, which was very close to the presidential election.
8. Since the election date was on Saturday when the stock market was closed, its impact would not be observed until the next Monday.
9. The No. 4 Nuclear Power Plant was originally supposed to be constructed by the Siemens AG of Germany, but the growing opposition from Taiwan’s local environment protection groups finally forced the construction project to halt indefinitely. In instant reaction, Siemens AG withdrew her agencies out of Taiwan; and Taiwan’s Public Media widely blamed the government for “jeopardizing Taiwan’s international trustworthiness”.
10. See Binder (1985) for further details in the advantages of using MVRM over Brown and Warner (1985)’s traditional event study methodology that is based upon the OLS Regression techniques.

11. The statistics of  $\phi_0$ ,  $\phi_1$  and  $\phi_2$  for other event windows are largely assembling, so we do not report all of them here in details.
12. Taiwan's government deregulated transferring to Mainland China the production of wafers up to the size of 8 inches. Mainland China by that time, however, had obtained the similar or more advanced production facility transfers from various enterprises of Western nations. Due to the late entry in a growingly intense competition within Mainland China's market, one would speculate that the potential economic gain that Taiwan's deregulation will bring upon her high-tech enterprises might be rather limited.

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