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Holiday Effects in Asian Markets

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Abstract

Holiday effects have been a hot topic in various disciplines, such as business, psychology, sociology and even more beyond. Numerous scholars have delved into this issue. Some of them mainly dwell on developed countries' stock markets, typically showing abnormal returns around thanksgiving, Christmas, New Year, Easter and so on, while others focus on the relationship between stock markets in developing countries and holiday effect. This research will investigate the holiday effects in 7 selected Asian stock markets, including Mainland China, Hong Kong, Taiwan, Singapore, Malaysia, Japan, and South Korea. As for the Holiday effects, the author mainly focuses on Chinese New Year effect, with comparison to National Day and May Day effects. The research report includes stock return index data from 2000 to 2014. This study has both theoretical and practical significance. Theoretically the research results may contribute to the construction of theoretical models. Practically this study can help us have a better understanding of the relationship between holiday effects and stock markets, and may shed light to others who are interested in this field.

Keywords: Holiday Effect, Asian countries, stock market, quantitative and qualitative analyses.

INTRODUCTION

Holiday effects, just as the name implies, refer to the change of consumption, production and other economic behavior that are brought about by the holidays. For example, it is evident that production and consumption speeds up with the arrival of Chinese Lunar New Year but slows down with the passing of this biggest Chinese holiday. From the surface it can be said that holiday effects are concerned with commercial activities, but actually holiday effects involve more than commercial activities: they may reflect the social psychology of citizens or a kind of cultural consumption pattern or a social reality. Owing to these diverse possibilities, holiday effects have been a hot topic in various disciplines, such as business, psychology, sociology and even more beyond. For instance, Lakonishok and Smidt [1] examine returns on the trading day around the public holidays in the U.S. and find significant abnormal returns before holidays. They find that roughly half of the gain in the Dow Jones Industrial Average occurs during the 10 pre-holiday trading days each year. Ariel [2] reports that the average preholiday return is much higher (nine to fourteen times) than the return on the remaining day, based upon the CRSP value-weighted and equally-weighted index returns during the period from 1963 to 1982 period. In addition, a large number of scholars both home and abroad have done a lot of research on this topic and many academic achievements have been made. Yet there is still room for furthering the research on holiday effects, especially in various Asian Stock markets in spite of the fact that this topic ----- holiday effects in Asian Stock markets have been explored by some other scholars.

In this paper, starting from quantitative and qualitative aspects, we will investigate how Chinese holidays impact on Asian Stock Markets. Since the world is in a rapidly globalized phase, Chinese traditional holidays have become universal festivals for the Chinese all over the world and have become a culture icon shared by many Asia-Pacific countries, such as Japan, South Korea, Singapore and Malaysia, etc. Thus, this study has both theoretical and practical implications. Theoretically the research results may contribute to the construction of theoretical models. Practically this study can help us better understand the relationship between holiday effects and stock markets, predict the trend of stock markets and shed light on those who are interested in this field.

RESEARCH QUESTIONS

- Is there a strong positive abnormal return related to Chinese New Year in such markets as mainland China, Hong Kong, Taiwan, Japan, South Korea, Singapore, as well as Malaysia?
- Do May Day holiday as well as Chinese National Day have holiday effects and what are their effects

like when compared with Chinese New Year effect?

- Is there a higher positive abnormal return before holidays like May Day, National Day, and Chinese New Year period and is there a negative abnormal return after the holiday?
- Does crisis such as major financial crises in Asian area and the 2008-2009 credit crises strengthen or weaken the holiday effect?

DATA

We obtain the daily price index of seven Asian areas, including mainland China, Hong Kong, Japan, Malaysia, Singapore, Taiwan and South Korea stock exchange markets, which are shown as follows:

Table-1: 7 Areas' Stock Markets

Areas	Stock Market
Mainland China	Shanghai Composite Index
Hong Kong	Hang Seng Index
Japan	Nikkei 225 Index
Malaysia	Kuala Lumpur Stock Exchange Composite Index
Singapore	Straits Times Index
Taiwan	Taiwan Stock Exchange Weighted Index
South Korea	Korea Composite Index

The data collected is from January 1st 2000 to December 31st 2014, the total end-of-day observations are 5478 for each market, 38346 observations in total. We obtain the historical data of each stock market's price index from one source, which is the Bloomberg database. In order to calculate the return before and after the holiday to test the holiday's effect of May Day, National Day and Lunar New year, we determine the days for these holidays. The May Day and National Day are fixed on May 1st and October 1st of every year, though the holidays are vary from y ear to year.

The Lunar New Year is the 1st of January on the lunar calendar, which may occur in January or February on the Gregorian calendar. So we determine the exact day on the Gregorian calendar for the Lunar New Year from 2000 to 2014, which shows in the Table below.

Table-2: Lunar New Year Holiday for Each Year

Lunar new year from 2000 to 2014		2007	18-Feb
2000	5-Feb	2008	7-Feb
2001	24-Jan	2009	26-Jan
2002	12-Feb	2010	14-Feb
2003	1-Feb	2011	3-Feb
2004	22-Jan	2012	23-Jan
2005	9-Feb	2013	10-Feb
2006	29-Jan	2014	31-Jan

Among the Holidays, the Lunar New Year involves market closure for some of the Asian markets, including mainland China, Hong Kong, Malaysia, Singapore, Taiwan and South Korea stock exchange markets. We omit the days on which the markets are closed, due to the holiday's closures differing from market to market.

METHODOLOGY

In order to answer the questions posed above, firstly we calculate the daily abnormal return for each of the market indexes in a simple way.

The logarithmic return is calculated as follows:

$$\mathbf{R_{it} = In\ (PI_{it}/PI_{it-1})} \quad \text{..... (1)}$$

Where R_{it} is stock market index return of market i and from date t-1 to date t, PIit is stock market closing price index on date t for market I and PIi_{t-1} is stock market closing price index on date t-1 for market i.

Secondly, we apply the regression-based approach to test the holiday effect. Considering the following assumptions: linearity in parameters, estimable parameters, nonstochastic regressors, zero expected value of disturbance, homoscedasticity or constant variance of disturbance, no autocorrelation, or serial correlation among the disturbances, no exact collinearity/multicollinearity/linear dependence among the X variables and normality of the residual term, we decide to use linear regression model to test whether there is a positive abnormal return before and after the holiday event. The regression model as follows [3]:

$$\mathbf{R_t = \alpha + \beta_1 D_t^{PRE} + \beta_2 D_t^{POST} + \varepsilon_t} \quad \text{..... (2)}$$

Where α is the average return for normal days for the period t, D_t^{PRE} is the dummy variable assigned a value one for the 3 days pre- holiday and zero otherwise. D_t^{POST} is the dummy variable which takes the value one for the days post-holiday (after the closure of the market) and zero otherwise. We will use Eviews to run the regression to test our hypothesis.

First, we determined the daily abnormal return for each of the stock market, then employed multiple regression model of each stock market with dummy variable that we set up above. The closure periods of each stock market were different, so we need to define the exact days for each market. Two dummy variables are set to one for the three days prior to and three days following the event. And we use 3 days as a time period to evaluate the holiday effect. Because a long length of observation as 15 days, the total observation days may become a month, that make the test result mix the holiday effect with the monthly effect. Some people use 5 days and 1 day. After the test, the five-day data is not significant, while one-day data is not so good as well, so we decide to use the three-day data instead.

There is a subprime crisis on March 3rd 2008 to March 31st 2009. To see the holiday effect during the crisis, we divided the time into three periods to see whether the effect is significant. (The three periods: pre-crisis: 1/3/2000 – 3/2/2008, during-crisis: 3/3/2008 – 3/31/2009, and post-crisis 4/1/2009 – 12/31/2014.) We use the model (2) and run the similar regression for each period to test it. To test the diminishing of the holiday effect, we use the following model:

$$\textbf{Difference}=R_n - R_a \quad \text{.....} \quad (3)$$

Where R_a is the average normal return for each year and R_n is the average return of the pre-Lunar New Year for each year.

RESULT

Holiday Effect of Pre- and Post- Holiday

Table-3: Pre- & post- holiday return of Chinese New Year

	constant	pre-	post-	r-squared
hk	**0.00002490**	**0.00203800**	**-0.00027600**	**0.000757**
	0.8244	0.0995	0.7854	
sh	**0.00005480**	**0.00252900**	**0.00109200**	**0.001969**
	0.6335	0.0137	0.2871	
sg	**0.00001910**	**0.00029000**	**0.00067300**	**0.000234**
	0.8245	0.7099	0.3882	
tw	**-0.00000424**	**0.00152000**	**0.00044100**	**0.000765**
	0.9675	0.1049	0.6381	
jp	**-0.00004050**	**0.00106100**	**0.00142800**	**0.000824**
	0.7201	0.2958	0.1596	
kc	**0.00006020**	**0.00283400**	**-0.00044300**	**0.001325**
	0.6100	0.0298	0.6781	
mkl	**0.00006250**	**0.00120200**	**0.00105000**	**0.002188**
	0.3129	0.0312	0.0598	
average	**2.52514E-05**	**0.001639143**	**0.000566429**	

pre-holiday, post-holiday parameters and their p-values of Chinese New Year. hk, sh, sg, tw, jp, kc and mkl represent Hong Kong, Shanghai, Singapore, Taiwan, Japan, Korea and Malaysia market.

In Table-3, the estimated coefficients and the p-value of the parameters are reported. In the first column, we list seven chosen stock markets: Hong Kong, Shanghai, Singapore, Taiwan, Japan, South Korea, and Malaysia. The second column reports the regression results of the average return on normal days. The regression results of pre- and post- Spring Festival effects are respectively shown in the third and fourth columns. For each market, the first row reports the estimated coefficients except for the last one (we put R-squared value at the bottom of this row as a reference), and the second row reports the p-value.

In the first place, let's see the data of the entire markets, analyzing them from a macroscopic perspective. The results in Table-3 indicate significantly higher pre-holiday returns in all markets. The average value of pre-holiday return for the seven markets is 0.1664 percent and the average return on other days of the year is 0.0025 percent. This suggests that pre-holiday return is nearly sixty seven times higher than the normal days return at the market level. The average post-holiday return for the seven markets is 0.05914 percent. Though it is not that significantly high compared with the pre-holiday return, the post-holiday return is still around twenty times higher than the normal days return at the market level. So according to the mean value, we can still observe the significance of pre- and post-holiday effects on the seven stock markets.

Apart from the significant higher level of average pre- and post-holiday return, we will also interpret the Table using the p-value, which helps us to weigh the strength of the evidence better. For the overall markets, we can apparently see that four out of seven have a corresponding pre-holiday p-value that is smaller than 0.1, and they are: Hong Kong(0.0995), Shanghai(0.0137), South Korea(0.0298), and Malaysia(0.0312). Apart from these four markets, Taiwan has a p-value that is slightly greater than 0.1, which is 0.1049. All these five stock markets indicate weak evidence against the null hypothesis, namely, our sample provides enough evidence for a significant level of pre-holiday effects especially in each of those five markets. As for Singapore (0.7099) and Japan (0.2958)

markets, both of their p-value is obviously larger than 0.1. Thus, our sample cannot provide enough evidence to show the significance of per-holiday effects in these two markets. In addition to the pre-holiday p-value of the seven stock markets, six out of them have a post-holiday p-value that is greater than 0.1, except that Malaysia has a p-value (0.0598) smaller than 0.1. This result reveals that most of the stock markets don't display a significant level of post-holiday effects.

Next, let's focus on the specific stock markets and analyze them from a microscopic perspective. We find that the pre-holiday effect is most significant in Shanghai stock market compared with the others, for the Shanghai stock market shows the lowest p-value (0.0137). And the Singapore market has the highest p-value (0.7099), which is almost fifty times larger than the smallest p-value. Therefore Singapore stock market has the least significance of pre-holiday effect compared with the other markets. For the post-holiday effect, negative coefficients of Hong Kong and South Korea stock markets are observed, and these two markets also have the highest (0.7854) and the secondary highest (0.6781) p-value over the whole markets. In other words, the post-holiday effect is least significant in Hong Kong and Korea markets compared with the other markets, and the average return of post-holiday for these two markets decrease slightly compared to that of the other time in a year. Moreover, Malaysia has the highest significance of post-holiday effect owing to its lowest p-value (0.1596), which is five times smaller than the highest p-value (0.7854). All in all, for the chosen seven stock markets we can still find significance of pre- spring festival effects in terms of the p-value, and in general, our findings confirm the prior empirical evidence on the existence of the holiday effect.

Chan *et al.*, [4] reveal that some holidays lead to higher returns than others in their research. To test this, we include dummy variables for two specific holidays in our regression model. They are National Day and May Day. Their respective regression results are shown in Table-4.

Table-4: Pre- & post- holiday return of Chinese National Day

	constant	pre-	post-	r-suquared
hk	**0.00000482**	**0.00100400**	**0.00103900**	**0.000679**
	0.9659	0.2652	0.2529	
sh	**0.00008320**	**0.00044600**	**0.00089200**	**0.000258**
	0.4700	0.6642	0.3847	
sg	**0.00003300**	**0.00001370**	**-0.00020900**	**0.000019**
	0.7015	0.9860	0.7891	
tw	**0.00002800**	**-0.00015100**	**-0.00054100**	**0.000097**
	0.7877	0.8718	0.5637	
jp	**0.00000018**	**-0.00051000**	**-0.00032800**	**0.000096**
	0.9987	0.6158	0.7470	
kc	**0.00006250**	**0.00033000**	**0.00026600**	**0.000040**
	0.5983	0.7577	0.8124	
mkl	**0.00009770**	**-0.00038500**	**-0.00003250**	**0.000200**
	0.1166	0.3911	0.9536	
average	**0.00004420**	**0.00010681**	**0.00015521**	

pre-holiday, post-holiday parameters and their p-values of Chinese national day. hk, sh, sg, tw, jp, kc and mkl represent Hong Kong, Shanghai, Singapore, Taiwan, Japan, Korea and Malaysia market.

The result in Table-4 shows a more complicated situation. We can observe negative coefficients of pre-National Day in Taiwan, Japan and Malaysia, namely, the average return of pre-National Day decreases compared with that of the other time in a year among these three markets. For the rest markets, more positive coefficients of pre-National Day are observed. In other words, the average return of pre-National Day tends to increase among the other four markets. The average value of pre-holiday return is 0.0151 percent and the average value of return on the other days of the year is 0.00442 percent. This result suggests that pre- National Day returns are around three times higher than the normal days return at the market level. The average post-holiday return for the seven markets is 0.02007 percent, almost five times higher than the normal days return at the market level. However, more negative coefficients of post-National Day are observed. Singapore, Taiwan, Japan and Malaysia all tend to have a decreased return after the National Day.

Each of the markets has a p-value that is greater than 0.1 for both the pre- and post-National Day. For the pre-National Day returns, Singapore stock market shows the highest p-value (0.9860), and Hong Kong market has the lowest p-value (0.2652). For the post-holiday effect, Malaysia has the highest p-value (0.9536), and Hong Kong has the lowest p-value (0.2529). This statistic analysis clearly shows that the National Day effect is not obvious in the seven markets, and we cannot observe the significant level as well.

Table-5: Pre- & post- holiday return of May Day

	constant	pre-	post-	r-squared
hk	**0.00003010**	**0.00156300**	**-0.00049300**	**0.000524**
	0.7881	0.1921	0.6376	
sh	**0.00008070**	**0.00121600**	**0.00032900**	**0.000412**
	0.4832	0.2364	0.7513	
sg	**-0.00000822**	**0.00148400**	**0.00175600**	**0.002289**
	0.9238	0.057	0.0243	
tw	**0.00003840**	**-0.00156700**	**-0.00005340**	**0.000738**
	0.7121	0.0984	0.9546	
jp	**-0.00000317**	**-0.00021700**	**-0.00036100**	**0.000045**
	0.9776	0.8304	0.7278	
kc	**0.00007420**	**0.00060800**	**-0.00021900**	**0.000075**
	0.5295	0.6198	0.8586	
mkl	**0.00007690**	**0.00016800**	**0.00090500**	**0.000735**
	0.2150	0.7630	0.1048	
average	**4.12729E-05**	**0.000465**	**0.000266229**	

pre-holiday ,post-holiday parameters and their p-values of May Day. hk, sh, sg, tw, jp, kc and mkl represent Hong Kong, Shanghai, Singapore, Taiwan, Japan, Korea and Malaysia market.

Table-5 reveals the regression result of pre- and post- May Day. The average value of pre-holiday return for all markets is 0.050627 percent and the average return on other days of the year is 0.004127 percent. The average pre-May Day return is around twelve times higher than the average normal days return at the market level. The average post-holiday return for the seven markets is 0.0307 percent, and it is around seven times higher than the average normal days return.

At the same time, we can evidently see that the most markets have a corresponding p-value that is greater than 0.1. For the pre-holiday returns, Japan shows the highest p-value (0.8304), and Singapore shows the lowest p-value (0.057). For the post-holiday effect, Taiwan has the highest p-value (0.9546), and Singapore has the lowest p-value (0.0243). Based on this data, we find that only Singapore reveals the significance of pre- and post- May Day effect while the other markets don't show that effect.

Besides, among those three festivals and all those 7 markets, we find that R-squared of regressions are quite small, which seems that the holiday's effect is not as strong as we expected. It is also a common phenomenon for most paper that we browsed.

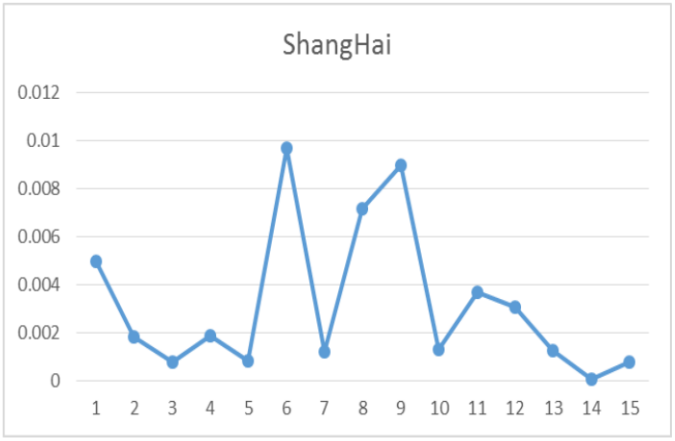
Among the papers we browsed, there is no definite evidence for the holiday effect. Actually we may say the holiday effect is not so strongly supported by any potent theory.

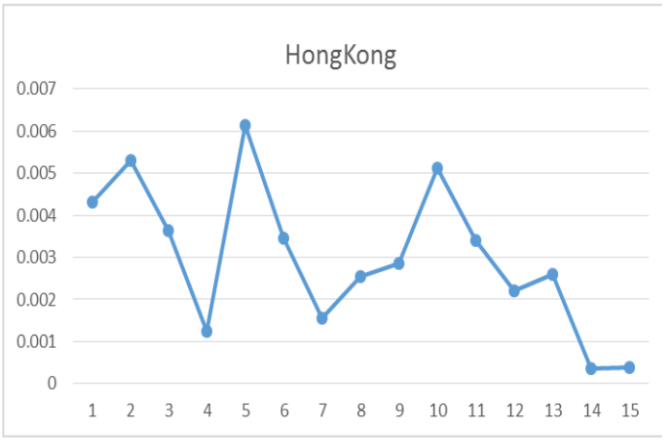
From the paper, *Pre-holiday effects: International evidence on the decline and reversal of a stock market anomaly*, the R^2 for Hong Kong market is only 0.002 for the period from 1973 to 1997, which is also a quite small number. In the paper, *The Asian crisis and calendar effects on stock returns in Thailand*, it also has a low R^2 for the effect, and the change in the R^2 is quite obvious during the period the studied. The pre-crisis R^2 is nearly three times larger than the post-crisis R^2, which shows that the holiday effect is really influenced by the financial crisis. The R^2 tends to be small after the crisis.

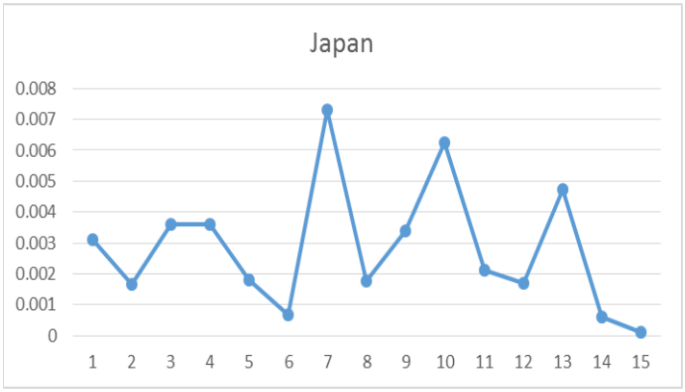
The period of our study is from 2000 to 2014, which is more recent than the others' studies. With the assumption that the market is more effect after the financial crisis, especially after the subprime crisis which happened in 2008, the effect for the holiday will be declined by the time. The R^2 will be smaller than the former studies. This is the reason why compared to others' studies, the R^2 is relatively low for our test.

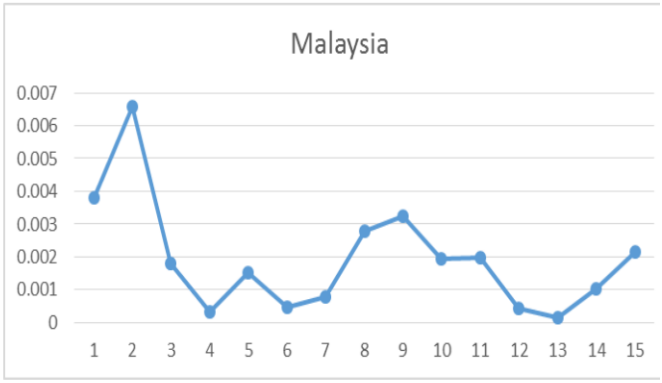
Diminishing Analysis

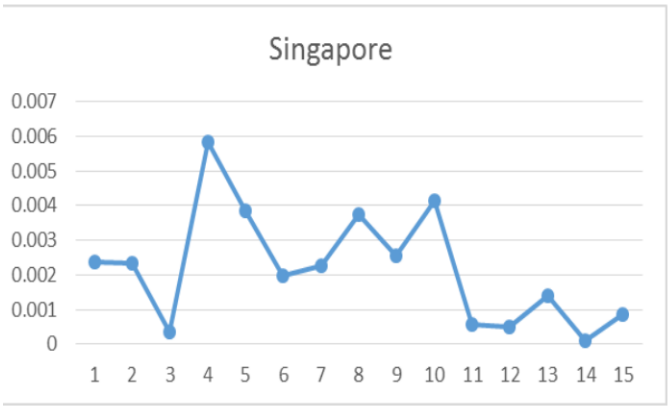
Table-6: Normal day average return and pre-lunar New Year holiday return for each year for each market

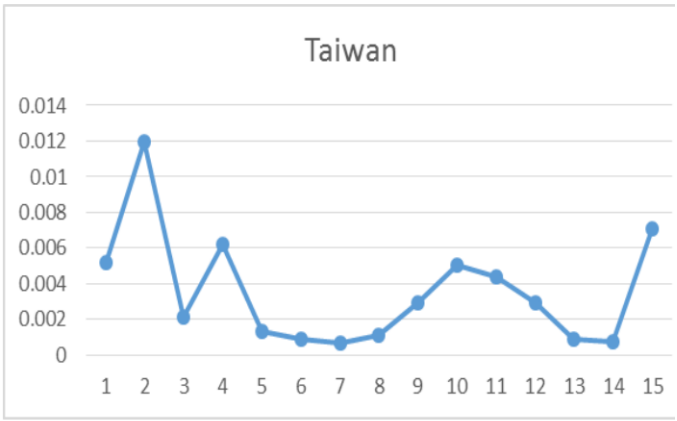


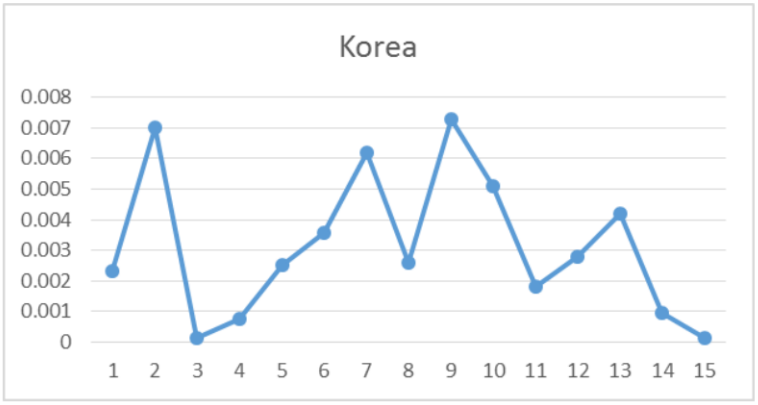












From the Tables and the analysis above, the holiday's effect may not be so significant during the chosen period. So we do a test to determine whether the holiday's effect is diminishing or not.

To test the diminishing of the holiday effect, we choose the pre-Lunar New Year as the representative to see whether the effect is diminishing or not. We calculate the average normal return for each year and the average return of the pre-Lunar New Year return and to calculate the differences for them. The Table shows that Shanghai Composite Stock market, which is a big market and closely related to the Lunar New Year, has the strongest holiday effect. Japan as a country doesn't have the Lunar New Year and also no market closure during this holiday. Therefore Nikkei 225 has less lunar New Year's effect than the Shanghai Composite Stock market. The average holiday abnormal return of the Nikkei 225 is only a half of Shanghai market, with an average of 0.001042821 during the chosen period. However, Singapore's Straits Times Index is that the market has the least abnormal holiday returns among the seven markets. What's more, Singapore's Straits Times Index is a typical representative among the seven markets of the diminishing phenomenon.

We can see that the effect for most countries shows obvious decline trends since 2008, which the possible influence by the subprime crisis is from March 3rd 2008 to March 31st 2009.Generally speaking, there is a diminishing phenomenon after the subprime crisis happened.

Crisis and Holiday Effect

We noticed that credit crisis appeared almost all over the world during 2008-2009. We are interested in whether the crisis would have different influences on the holiday effect. To help analyze that question, we divide the whole period selected into three parts, pre-crisis: 1/3/2000 – 3/2/2008, during-crisis: 3/3/2008 – 3/31/2009, and post-crisis 4/1/2009 – 12/31/2014. For each period, the same model previously used is put into practice, to obtain the holiday abnormal return. Moreover, as the result shown in the previous chapter, we find the absence of post-holiday effect in those 7 Asian markets. By considering that, the only parameter we pay attention is the pre-holiday dummy variable for all those markets and all of the holidays we mentioned. Table 7, 8 and 9 show the pre-holiday parameter for full period, pre-crisis, crisis and post-crisis period, as well as the p-value.

Table-7: Pre-Spring Festival Return before, during and after credit crisis

	full period	pre-crisis	crisis	post-crisis
hk	**0.00203800**	**0.00196700**	**0.00079700**	**0.00242000**
	0.0995	0.1808	0.9332	0.1696
sh	**0.00252900**	**0.00333900**	**0.00085800**	**0.00136100**
	0.0137	0.0098	0.9019	0.3522
sg	**0.00029000**	**0.00077600**	**-0.00226500**	**-0.00005810**
	0.7099	0.4353	0.6827	0.9554
tw	**0.00152000**	**0.00228900**	**-0.00317600**	**0.00108900**
	0.1049	0.0809	0.5445	0.3682
jp	**0.00106100**	**0.00136800**	**-0.00495100**	**0.00174800**
	0.2958	0.2480	0.4961	0.2680
kc	**0.00283400**	**0.00373100**	**-0.00154900**	**0.00209400**
	0.0298	0.0452	0.8404	0.1642
mkl	**0.00120200**	**0.00171600**	**-0.00054600**	**0.00063700**
	0.0312	0.0289	0.8691	0.3405

pre-holiday parameter and their p-values of Chinese New Year. hk, sh, sg, tw, jp, kc and mkl represent Hong Kong, Shanghai, Singapore, Taiwan, Japan, Korea and Malaysia market.

As Table-7 shows, most of the markets (except for Hong Kong and Singapore) in pre-crisis time had even stronger Chinese new year effect. Take Taiwan market as an example. The return for pre-crisis time is around 50% higher than the full period. Other markets, like Korea and Malaysia, the pre-crisis period has around 30% higher pre-holiday returns than the full period. Besides, we can observe that the p-values are lower than 10% for the Shanghai, Taiwan, Korea and Malaysia markets, which means the pre-holiday positive returns are significantly different from zero. This shows Chinese New Year effect is obvious and significant in Shanghai, Taiwan, Korea and Malaysia at 5% significant level. However, things change during crisis period. Singapore, Taiwan, Japan, Korea and Malaysia markets have negative pre-holiday returns during crisis. Although all of them have relatively large p-values, we have not sufficient evidence that the negative returns are significantly different from zero. The results of the average pre-holiday returns during crisis and the p-values show holiday-effect disappears, for there is no significant abnormal return. Then we move on to the post-crisis period. Compared to the pre-crisis period, we can find the returns are declined, except for Hong Kong, but we also notice that the p-value of return in Hong Kong is increasing, meaning that the statistics is no more significantly different from zero at 10% level. According to the returns' statistics, there is still some holiday effect after crisis. However, not only from the number size of the returns but also

from the p-value, we can find that after crisis, holiday effect is not that obvious and important in all those selected Asian markets.

Table-8: Pre-May day Return before, during and after credit crisis

	full period	pre-crisis	crisis	post-crisis
hk	**0.00156300**	**0.00100000**	**0.00165000**	**0.00225800**
	0.1921	0.5085	0.8623	0.1445
sh	**0.00121600**	**0.00148800**	**0.00643100**	**-0.00003320**
	0.2364	0.2774	0.3563	0.9802
sg	**0.00148400**	**0.00198400**	**-0.00090900**	**0.00119700**
	0.0570	0.0598	0.8698	0.2074
tw	**-0.00156700**	**-0.00336400**	**0.00031700**	**0.00062800**
	0.0984	0.0154	0.9519	0.5802
jp	**-0.00021700**	**-0.00117000**	**0.00419400**	**0.00029200**
	0.8304	0.3516	0.5660	0.8395
kc	**0.00060800**	**-0.00053400**	**0.00076400**	**0.00203300**
	0.6198	0.7747	0.9208	0.1104
mkl	**0.00016800**	**-0.00001370**	**-0.00022700**	**0.00046300**
	0.7630	0.9868	0.9453	0.4483

pre-holiday parameter and their p-values of May Day. hk, sh, sg, tw, jp, kc and mkl represent Hong Kong, Shanghai, Singapore, Taiwan, Japan, Korea and Malaysia market.

Table-9: Pre-Chinese National Day Return before, during and after credit crisis

	full period	pre-crisis	crisis	post-crisis
hk	**0.00100400**	**0.00261900**	**-0.00641500**	**-0.00101100**
	0.2652	0.0120	0.4090	0.4420
sh	**0.00044600**	**0.00017100**	**0.00687400**	**-0.00027100**
	0.6642	0.9008	0.3213	0.8386
sg	**0.00001370**	**0.00145800**	**-0.00439000**	**-0.00119900**
	0.9860	0.1663	0.4254	0.2063
tw	**-0.00015100**	**0.00055000**	**-0.00950700**	**0.00045900**
	0.8718	0.6925	0.0688	0.6784
jp	**-0.00051000**	**0.00169500**	**-0.00867300**	**-0.00211300**
	0.6158	0.1766	0.2328	0.1423
kc	**0.00033000**	**0.00115600**	**-0.00482800**	**0.00007720**
	0.7577	0.4756	0.4415	0.9454
mkl	**-0.00038500**	**-0.00060800**	**0.00003500**	**-0.00020700**
	0.3911	0.3798	0.9892	0.6641

pre-holiday parameter and their p-values of Chinese national day. hk, sh, sg, tw, jp, kc and mkl represent Hong Kong, Shanghai, Singapore, Taiwan, Japan, Korea and Malaysia market.

Similarly, holiday effect of May Day and Chinese national day does not appear during crisis period. What's more, we observe that Hong Kong, Korea have even greater return before May Day in post-crisis period than in pre-crisis period. Meanwhile, the p-values are lower for those returns show the significant level is higher. One of the explanation of that inconsistent result is more would choose to have a trip to Hong Kong and Korea during May Day holiday, which could bring economic benefit during holidays.

For Chinese national day, though the full period shows no holiday effect, we find that before the credit crisis, there is pre-holiday abnormal return in Hong Kong. After crisis, none of the markets show pre-

Chinese national day effect, even in Hong Kong, and it may be explained by political issue.

Possible Explanation & Comparison

The Lunar New Year is the traditional and the most important holiday in China. This holiday has a much stronger effect in the Shanghai Composite Index than any other markets in Asian area.

After the crisis, the Asian stock markets may become more efficient, and abnormal return of the Lunar New Year will be less as before. Therefore, the effect will also be weaker. According to Bashir and Zeb's paper, mainland China stock market, the biggest market in the Asian region, has minimum spillovers from other markets. As a consequence, Shanghai Composite Index may have less influence by the subprime crisis compared to the other markets.

For the crisis related analysis, we find that for Chinese New Year, we have greater abnormal return before crisis. This helps us conclude that before credit crisis, market efficiency was quite weak among Asian markets; during the crisis period, markets had lots of uncertainties, and they did not follow the normal market orders, which explains why we cannot find any pattern here. Then we go to the after-crisis- period, finding that none of the market shows abnormal return before Chinese New Year holiday. It can be one piece of evidence that market efficiency has a certain level of improvement because of credit crisis.

For May Day and National Day, it is quite interesting to see that Singapore shows significant abnormal return before both holidays during pre-crisis periods, while Singapore market does not even show pre-holiday effect for Chinese New Year holiday. But same as Chinese New Year holiday, after crisis, none of the markets shows significant pre-holiday effect. It may be due to after crisis, investors would be more cautious before making an investment. Thus holiday would be one of their consideration but less significant. Another situation that should be mentioned is that Hong Kong market and Korea market do not have significant abnormal pre-holiday return before crisis period, though May Day holiday effect appears after crisis for those two markets. One of the possible reason is tourism. We observe that Korea and Hong Kong are popular destinations during few days holiday. After crisis, having a trip during holiday becomes more and more popular. And tourism helps third industry to obtain considerable profit. Thus the stocks of relative industries will be expected to have high price by investors.

Actually the diminishing holiday effects in other countries and regions have also been revealed. For example, Dodd and Gakhovich [5] analyzed the situation of diminishing holiday effect among stock markets in Central and Eastern European markets. To draw a rough conclusion, holiday effect is diminishing in both developed markets and developing markets, which is consistent with efficient market theory. Moreover, Ken *et al*., [6] presented the pre-holiday return before, during and after crisis in Thailand. Similarly, they find much significant pre-holiday effect before crisis than after crisis, though they research for more kinds of calendar effects, such as within-month effects, day of the week effects, the conclusion is conform with us, and it can be seen as an evidence for the conclusion that crisis helps to reorganize the markets and makes the market more efficient.

CONCLUSION

Our experimental analysis is for testing the holiday effect in seven Asian markets, including Mainland China, Hong Kong, Taiwan, Singapore, Malaysia, Japan, and South Korea from the beginning of 2000 to the end of 2014. With the OLS regression analysis, we found that holiday effect presents strongly for pre- Chinese New Year holiday for Mainland China, Hong Kong, Taiwan, Malaysia, Japan and South Korea but not Singapore, though Singapore shows strong pre-holiday effect for May Day. All those seven markets show weak pre-holiday effect for Chinese National Day. Besides, in the diminishing test, we discover that holiday effects have become weaker and weaker as time goes by. Furthermore, in the crisis related test, all markets show no holiday effect during crisis time, and nearly all markets tend to have normal return after crisis. We try to give some explanations for the holiday effects, though those have not been verified. Giving more specific explanations, we will try to predict the holiday effect in the future time, and test if there is any herding behavior among markets during holiday time.

Appendix

Return of the pre-spring festival and normal day, and their difference.

shanghai	2000	2001	2002	2003	2004	2005	2006	2007
normal	0.000645647	-0.000440687	-0.000343092	0.000152926	-0.000288821	-0.000276388	0.001519332	0.001125052
pre-holiday	0.005624105	0.001388615	-0.001116528	0.002016321	-0.00110456	0.009435447	0.000315408	0.008275556
difference	-0.004978458	-0.001829302	0.000773436	-0.001863395	0.000815739	-0.009711834	0.001203924	-0.007150504
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.001982593	0.001062172	-0.000322898	-0.000472613	4.02061E-05	-0.000128587	0.000761843
pre-holiday		0.006972907	-0.000250674	0.00336229	0.002599418	0.001300653	-4.33206E-05	-1.54506E-05
difference		-0.008955499	0.001312846	-0.003685189	-0.003072031	-0.001260446	-8.52662E-05	0.000777294

hongkong	2000	2001	2002	2003	2004	2005	2006	2007
normal	-0.000300243	-0.000567632	-0.000397815	0.000614327	0.000141706	3.60798E-05	0.000498298	0.000554244
pre-holiday	0.004005633	0.00472728	0.003248119	-0.000619699	0.006269705	0.003495356	0.002059912	0.003099283
difference	0.004305876	0.005294912	0.003645934	-0.001234026	0.006127999	0.003459276	0.001561614	0.002545039
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.001133549	0.00079219	4.92867E-05	-0.000420179	0.000930525	4.57505E-05	1.78648E-05
pre-holiday		-0.003979554	-0.004321662	0.003457914	0.001778529	0.003516514	0.000416088	0.000390237
difference		-0.002846004	-0.005113852	0.003408627	0.002198708	0.00258599	0.000370337	0.000372372
japan	2000	2001	2002	2003	2004	2005	2006	2007
normal	-0.000602137	-0.00049355	-0.000407633	0.000432032	0.000107281	0.000591007	2.89054E-05	-0.000230701
pre-holiday	0.002510307	0.001150909	0.003180145	-0.003183776	0.001923066	0.001279114	0.007321411	0.001520557
difference	0.003112444	0.001644459	0.003587778	-0.003615809	0.001815784	0.000688107	0.007292506	0.001751258
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.000927701	0.000388772	-7.99959E-05	-0.000358456	0.000304408	0.000796424	0.000123735
pre-holiday		-0.004332099	-0.00587049	0.002027635	0.00134935	0.005040173	0.001385575	1.28303E-05
difference		-0.003404397	-0.006259262	0.002107631	0.001707806	0.004735765	0.00058915	-0.000110904
malaysia	2000	2001	2002	2003	2004	2005	2006	2007
normal	-0.000412354	-3.8426E-05	-0.000108192	0.000367251	0.000215516	-9.33866E-06	0.000339141	0.000450225
pre-holiday	0.003378354	0.006536237	-0.00190359	3.26687E-05	0.001741303	-0.000464446	0.001117746	0.003222026
difference	0.003790707	0.006574663	-0.001795398	-0.000334583	0.001525787	-0.000455107	0.000778605	0.002771801
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.000898716	0.000676256	0.000285544	8.20858E-06	0.000172628	0.000188791	-0.000129264
pre-holiday		0.0023386	-0.001268412	0.002273447	0.000460025	0.000314083	-0.000848907	0.002032368
difference		0.003237316	-0.001944668	0.001987902	0.000451816	0.000141456	-0.001037697	0.002161631
singapore	2000	2001	2002	2003	2004	2005	2006	2007
normal	-0.000537607	-0.000325684	-0.000326811	0.000542643	0.000225004	0.000197869	0.000390841	0.000222115
pre-holiday	0.001839373	0.002026548	-0.000663828	-0.005310027	0.004094089	0.002180891	0.002650442	0.003979527
difference	0.00237698	0.002352232	-0.000337017	-0.005852671	0.003869085	0.001983023	0.002259601	0.003757412
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.001158046	0.000914426	0.000158893	-0.000322314	0.00029988	1.4568E-06	0.000115279
pre-holiday		-0.003696478	-0.003239782	0.000730149	-0.000834768	0.001713618	-0.000104431	-0.000725537
difference		-0.002538432	-0.004154209	0.000571256	-0.000512454	0.001413738	-0.000105888	-0.000840816
taiwan	2000	2001	2002	2003	2004	2005	2006	2007
normal	-0.000913995	0.000134644	-0.000428755	0.004398457	5.60316E-05	0.000102745	0.000302249	0.000157367
pre-holiday	0.004285681	0.01208195	0.001674444	-0.001825439	0.001380156	0.000971695	0.001013006	-0.000925376
difference	0.005199676	0.011947307	0.002103199	-0.006223897	0.001324124	0.000868951	0.000710757	-0.001082743
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.001111255	0.001059702	0.00010711	-0.000453852	0.00012482	0.000186965	0.000171335
pre-holiday		0.001852396	-0.003970746	0.004524075	0.002457832	0.001047436	0.000930899	-0.006910825
difference		0.002963651	-0.005030448	0.004416965	0.002911683	0.000922616	0.000743934	-0.00708216

korea	2000	2001	2002	2003	2004	2005	2006	2007
normal	-0.001370697	0.000476339	-0.000179986	0.000459503	0.000143942	0.000709453	-6.10177E-06	0.000461762
pre-holiday	0.000969128	0.007485586	-4.89213E-05	-0.000300537	0.002664651	0.004295364	0.006165499	0.003066822
difference	0.002339825	0.007009246	0.000131065	-0.000760041	0.002520709	0.003585911	0.006171601	0.00260506
year		2008	2009	2010	2011	2012	2013	2014
normal		-0.00100389	0.000752594	0.000320889	-0.000169838	0.000106248	1.04775E-06	-8.80783E-05
pre-holiday		0.006267983	-0.004357208	0.002120166	-0.002972129	0.004306384	0.000946967	4.4007E-05
difference		0.007271873	-0.005109802	0.001799277	-0.002802291	0.004200135	0.000945919	0.000132085

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