“The Chinese New Year holiday effect: evidence from Chinese ADRs”

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The Chinese New Year holiday effect: evidence from Chinese ADRs

Abstract

The finance literature documents substantial evidence of pre-holiday positive returns of public holidays in both developed and emerging stock markets, perhaps due to the positive holiday sentiment. The Chinese Lunar New Year (CNY), or the Spring Festival, is the biggest holiday for the Chinese people. A unique dataset of Chinese stocks traded in the United States, in the form of American Depositary Receipts (ADRs), allows us to observe the returns of Chinese shares even during the CNY. The author uses this unique sample to offer a direct test of the CNY effect. The paper computes the average daily returns in three event windows: one week prior to the CNY, the holiday week, and one week after the CNY. Using all Chinese ADRs completed from 1993 to 2011, we find a positive holiday effect during the CNY festival, but this effect becomes statistically insignificant after we control or adjust for the U.S. market returns. Meanwhile, the Chinese ADRs have significantly higher average returns in the week prior to the festival, but lower average returns in the post-festival week than the rest of the year. The paper also investigates the monthly effect of Chinese ADRs.

Keywords: seasonalities, anomalies, Chinese New Year, market efficiency, holiday effect.
JEL Classification: G14.

Introduction

The efficient market hypothesis (EMH) postulates that stock prices fully incorporate all publicly available information. One of the implications of the EMH is that the stock market displays no predictable patterns that can be explored reliably for abnormal returns. Basically, the EMH argues that share prices are inherently unpredictable. Despite its theoretical appeal, the EMH has long been contested by academics as well as practitioners. Among the various financial anomalies that have been documented in the literature are the abnormal returns around public holidays. This phenomenon, known as the holiday effect, has been uncovered in both developed markets and emerging markets. Lakonishok and Smidt (1988) examine returns around 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 in each year. Ariel (1990) investigates intraday market returns and documents a significant pre-holiday effect. Over the pre-holiday period stock prices increase and have a much higher frequency of positive returns, particularly in the last hour. Unlike some other anomalies, the pre-holiday effect seems to be persistent over time (Lakonishok and Smidt, 1988).

Abnormal pre-holiday returns are also documented in many other developed markets such as the UK and Japan (Kim and Park, 1994), Hong Kong (McGuiness, 2005), Spain (Menue and Pardo, 2004), New Zealand (Cao et al., 2009), and Australia (Marrett and Worthington, 2009).

Studies on emerging stock markets provide consistent results of the holiday effect. For instance, McGuinness and Harris (2011) examine the Chinese Lunar New Year (hereinafter referred to as CNY) return effects within the context of the Mainland Chinese (Shanghai and Shenzhen) and Hong Kong market places. The CNY, also known as the Spring Festival, is the biggest holiday for the Chinese people. McGuinness and Harris find positive returns in the three days prior to and one day after the CNY holiday.

The primary explanation of the holiday effect is based on behavior finance (e.g., Thaler, 1999). The behavior argument is consistent with the notion that happier people tend to believe in more positive outcomes (Kavanagh and Bower, 1985). According to this argument, the higher pre-holiday returns are a result of a positive holiday sentiment. This occurs when people look forward to the holiday period, are optimistic and focused on non-work activities, and hence are reluctant to trade or close out positions on stock that they hold. This argument is supported by Hirshleifer and Shumway (2003) who suggest that the weather may have a psychological effect on investors' mood and how they perceive information. This behavioral trait of investors may also explain the existence of the holiday effect, as investors' outlook can become more positive around public holidays.

Chan, Khanthavit and Thomas (1996) consider the holiday effect within a cultural context. They find a stronger holiday effect around cultural holidays, compared to state holidays with no cultural origin. Similarly, Cadsby and Ratner (1992) and Yen and Shyy (1993) find that cultural holidays, such as the CNY, are related to economically significant abnormal returns in many Asian markets. Their findings point to the existence of a "cultural effect" within the holiday effect, at least in Asian stock markets.

The drawback of previous studies on the CNY effect of the Chinese stocks is that the Chinese stock market is closed for a week to celebrate the holiday. As a result, it is impossible to directly observe the

return behavior during the holiday. To overcome this drawback, we use Chinese stocks traded in the United States, in the form of American Depositary Receipts (ADRs), which continue to be traded during the CNY. We are able to obtain data for all Chinese ADRs listed on the New York Stock Exchange (NYSE) or Nasdaq since 1993.

This unique dataset allows us to offer a direct test of the CNY effect. And this is the major contribution of the paper. To this end, for each Chinese ADR, we compute the average daily returns in three event windows: one week prior to the festival, the festival week, and one week afterwards. Using all Chinese ADRs completed from 1993 to 2011, we find a positive holiday effect during the CNY festival, but it becomes statistically insignificant after we control or adjust for the U.S. market returns. Meanwhile, the Chinese ADRs have significantly higher average returns in the week prior to the festival, but lower average returns in the week after the festival than the rest of the year.

This paper also investigates the monthly return patterns of Chinese ADRs. The results indicate that monthly returns in April and July are significantly positive, while the returns in August, November, September and June are significantly negative.

The remainder of the paper is structured as follows. Section 1 provides a review of the relevant literature. Section 2 presents the data and empirical results. Section 3 examines the monthly return patterns of Chinese ADRs. The final section concludes and summarizes the paper.

1. Literature review

The finance literature documents extensive evidence of financial market seasonalities or calendar anomalies. Among the various financial anomalies that have been documented in the literature are the January (or turn-of-the-year) effect, day-of-the-week effect and holiday effect. Since the primary concern of the study is the abnormal returns around the Chinese New Year, we limit our literature review to studies of the holiday effect.

The holiday effect has been uncovered in the United States. Lakonishok and Smidt (1988) examine returns around public holidays in the U.S. and find significant abnormal returns before holidays. They show that roughly half of the gain in the Dow Jones Industrial Average occurs during the 10 pre-holiday trading days in each year. However, post-holiday returns are insignificant until 1952 and positive and significant from 1952 to 1986. These results are confirmed by several other studies. Ariel (1990), for instance, examines intraday market returns and documents a significant pre-holiday effect. Ariel shows that over one-third of the positive returns each year are made in the eight-trading days prior to a market-closed holiday. Over the pre-holiday period stock prices increase and have a much higher frequency of positive returns, particularly in the last hour.

Abnormal pre-holiday returns are also documented in many other developed markets such as the UK and Japan (Kim and Park, 1994), Hong Kong (McGuiness, 2005), Spain (Menue and Pardo, 2004), New Zealand (Cao et al., 2009), and Australia (Marrett and Worthington, 2009). Unlike some other anomalies, the pre-holiday effect seems to be persistent over time (Lakonishok and Smidt, 1988).

Studies on emerging markets provide consistent results of the holiday effect. A number of studies have examined the holiday effect of the Chinese stock markets. For instance, McGuinness and Harris (2011) examine the Chinese Lunar New Year (hereinafter referred to as CNY) return effects within the context of the mainland Chinese (Shanghai and Shenzhen) and Hong Kong market places. The CNY, or the Spring Festival, is the biggest holiday for the Chinese people. They find positive returns in the three days prior to and one day after the CNY holiday. Moreover, the effect is common to all major sectors of the Hong Kong market as well as to the Shanghai and Shenzhen markets in Mainland China.

Dodd and Gakhovich (2011) document evidence of holiday effect in 14 emerging Central and Eastern European markets. In their study, a number of countries show abnormal pre-holiday returns. They also document abnormal post-holiday returns. They further show that the pre-holiday effect is most pronounced in the earlier years of financial market operations, and its importance is declining over time.

The finance literature has provided two possible explanations for the holiday effect. The first one, as presented by Fabozzi, Ma and Briley (1994), is that the effect may be part of the other seasonalities that have already been documented. This is pertinent in situations where holidays occur primarily on specific days of the week or in specific periods such as the beginning or end of the month. This means that a vital part of ascertaining whether there is truly a holiday anomaly is to eliminate the possibility that the holiday is capturing other calendar effects.

The second explanation of the holiday effect is based on behavior finance (e.g., Thaler, 1999). The behavior argument is consistent with the notion that happier people tend to believe in more positive outcomes (Kavanagh and Bower, 1985). According to this argument, the higher pre-holiday returns are a result of a positive holiday sentiment. This occurs when people look forward to the holiday period, are optimistic and focused on non-work activities, and

hence are reluctant to trade or close out positions on stock that they hold. This argument is supported by Hirshleifer and Shumway (2003) who suggest that the weather may have a psychological effect on investors' mood and how they perceive information. In their empirical investigation of the link between the weather and stock market returns, they document returns of 24.8% and 8.7% on sunny and cloudy days respectively. This behavioral trait of investors may also explain the existence of the holiday effect, as investors' outlook can become more positive around public holidays.

Chan, Khanthavit and Thomas (1996) consider the holiday effect within a cultural context for the stock exchanges of Malaysia, Singapore, India and Thailand. They find a stronger holiday effect around cultural holidays, compared to state holidays with no cultural origin. More specifically, they show that in India there is a pre-holiday effect before the Hindu holidays. Malaysia sees significant returns before the Islamic New Year and Vesak. Singapore and Thailand experience abnormal returns before the Chinese New Year.

Similarly, Cadsby and Ratner (1992) and Yen and Shyy (1993) find that cultural holidays, such as the Chinese New Year, are related to economically significant abnormal returns in Hong Kong, Japan, Malaysia, Singapore, Korea and Taiwan. Their findings suggest the existence of a "cultural effect" within the holiday effect, at least in Asian stock markets.

Table 1. Sample distribution by year

This table presents the number of Chinese ADRs created each year during the years 1993-2012.

Year	Number of new ADRs created in each year	Total number of ADRs
1993	1	1
1994	1	2
1995	0	2
1996	1	3
1997	3	6
1998	1	7
1999	0	7
2000	4	11
2001	2	13
2002	1	14
2003	1	15
2004	7	22
2005	8	30
2006	6	36
2007	25	61
2008	4	65
2009	7	72
2010	34	106
2011	12	118
Total	118	118

2. Data and results

Many Chinese stocks are now traded in the United States, in the form of American Depositary Receipts (ADRs), and they continue to be traded during the Chinese New Year. ADRs are negotiable certificates (denominated in U.S. dollars) that are issued by a U.S. bank to represent the underlying shares of a foreign stock, which are held in trust at a foreign custodian bank. ADRs are sold, registered, and transferred in the United States in the same manner as any share of stock.

To investigate the CNY effect, we first identify all Chinese ADRs, established before year-end 2011. The first Chinese ADR was established in 1993, by Sinopec Shanghai Petrochemical. By year-end 2011, a total of 118 Chinese firms had established ADR programs. All of them are listed on the New York Stock Exchange (NYSE) and Nasdaq.

We calculate the daily return for a stock as ln (P_t / P_{t-1}), where P_t is the close price on day t, and P_{t-1} is the close price on the previous day. We then calculate the average daily return for each stock during the following four event windows: (1) five trading days prior to the Spring Festival holiday; (2) the 5-day holiday; (3) five trading days after the festival; and (4) the whole year excluding the holiday.

For each event window, we form an equally weighted portfolio of all ADRs and calculate its average return, R_{EW}, as follows:

$$R_{EW} = \frac{\sum_{i=1}^{N} R_i}{N}, \quad (1)$$

where R_i the average daily return of stock i during a specific event window, and N is the number of ADRs. R_{EW} is the focus of this study. We also adjust the return by using the S&P 500 index in some analyses.

The results are presented in Table 2. The returns in Panel A are not adjusted by market returns. To detect for abnormal returns of Chinese ADRs around the Spring Festival holiday, we compare the R_{EW} for the four event windows as mentioned above. To set the stage for comparison, we first notice that the average daily return for the whole year excluding the five-day holiday is 0.053%, with a median of 0.013%. This translates a yearly return of 13.36% (= 0.053% x 252 trading days) for the entire sample period. During the five-day Chinese holiday, the average daily return of the Chinese ADRs is 0.238%, with a median of 0.148%. There is a significant run-up in five days

prior to the holiday, as indicated in the positive mean daily return, i.e., 0.226%. In the five days post the Chinese holiday, the average daily return is -0.032% while the median is 0.0%.

The t-test statistics indicate that the average return in the pre-holiday and the holiday periods are significantly higher than that in the whole year but excluding the holiday.

Table 2. Average daily returns before, during and after the Chinese New Year

This table presents the average daily returns and other summary statistics of Chinese ADRs during the four event windows: the five-day holiday (CNY), the five days prior to the holiday (Before), the five days after the holiday (After), and the whole year excluding the holiday (Whole year). The returns in Panel A are not adjusted while the returns in Panel B are adjusted by the market returns, where the market is proxied by the S&P 500 index. *N* is the number of observations. All figures except for *N* are in percentage. The *t*-test is for the difference between each of the first three event windows and the whole year excluding the holiday. * indicates significance at the 10% level; ** indicates significance at the 5% level; and *** indicate significance at the 1% level.

Event window	*N*	Mean	Median	Minimum	Maximum	Standard deviation	*T*-test
Panel A: Unadjusted returns							
CNY	605	0.238	0.148	-7.546	14.752	1.528	2.81***
Before	605	0.226	0.247	-5.017	11.201	1.623	2.49**
After	605	-0.032	0.000	-9.400	6.906	1.609	-1.24
Whole year	605	0.053	0.013	-2.227	3.267	0.528	/
Panel B: Adjusted returns							
CNY	605	0.070	0.002	-7.399	14.738	1.548	1.05
Before	605	0.122	0.163	-5.521	10.696	1.530	1.87*
After	605	-0.149	-0.092	-10.409	5.897	1.485	-2.37**
Whole year	605	0.001	-0.029	-2.509	2.985	0.464	/

In Panel B of Table 2, we adjust the ADR return by the market return, where the market is proxied by the S&P 500 index. The average adjusted return in the whole year but excluding the Chinese New Year holiday is 0.001%. The average returns during, before, and after the holiday are, respectively, 0.07%, 0.122%, and -0.149%. The *t*-test results indicate that the average adjusted return in the pre-holiday is significantly higher than that in the whole year excluding the holiday. On the other hand, the average adjusted return after the holiday is significantly lower than the rest of the year. The average adjusted return during the holiday, however, is not significantly different from the rest of the year.

Table 3 presents the results for each year. As can be observed from the table, in 11 out of 19 Spring Festivals during our sample period, the Chinese ADRs deliver positive average returns. Similarly, in 13 cases the average daily return is positive in the pre-holiday five-day period. On the other hand, the post-holiday return is positive in only eight cases.

Table 3. Average daily returns before, during and after the CNY by year

This table presents the average daily returns of Chinese ADRs, for each year, during the four event windows: the five-day holiday (CNY), the five days prior to the holiday (Before), the five days after the holiday (After), and the whole year excluding the holiday (Whole year). Returns are in percentage.

Year	CNY	Before	After	Whole year
1994	-1.239	1.096	0.179	-0.103
1995	0.854	-0.361	1.897	-0.015
1996	0.911	0.309	-0.795	0.090
1997	-0.223	-0.861	-0.406	-0.119
1998	2.727	-0.316	2.427	-0.258
1999	-0.683	0.639	0.303	0.245
2000	-1.156	0.016	-0.255	0.076
2001	-0.313	0.881	-0.097	-0.055
2002	0.116	1.310	-0.108	0.114
2003	0.495	-0.105	-0.396	0.314
2004	-1.302	0.305	-0.632	0.058
2005	-0.383	0.178	-0.246	-0.050
2006	0.193	0.176	-0.249	0.099
2007	0.845	0.429	-2.355	0.119
2008	1.033	-0.334	-0.579	-0.448
2009	0.282	-1.215	1.082	0.193
2010	0.201	0.713	0.141	-0.017

Table 3 (cont.). Average daily returns before, during and after the CNY by year

Year	CNY	Before	After	Whole year
2011	-0.457	0.039	0.187	-0.281
2012	0.651	1.058	0.216	0.569
Average	0.238	0.226	-0.032	0.053

To test for any difference in returns for the four event windows, we use regression analysis with dummy variables. To this end, we estimate the following regression model:

$$R_{ADR} = \gamma_1 \times D_{CNY} + \gamma_2 \times D_{Before} + \gamma_3 \times D_{After} + \\ + \gamma_4 \times D_{Whore\ Year} + \beta \times R_m + \varepsilon, \quad (2)$$

in which R_{ADR} is the unadjusted ADR return, and R_m is the market return as proxied by the S&P 500 index. The market return is used to control for ADR return fluctuations caused by the U.S. stock market. The four dummy variables are defined as follows: D_{CNY} equals one during the Spring Festival and zero if otherwise; D_{Before} equals one during the five-day period before the Spring Festival and zero if otherwise; D_{After} equals one for the five trading days after the Spring Festival and zero if otherwise; $D_{Whole\ Year}$ equals one for the whole year except for the Spring Festival and zero if otherwise.

The intercept term is excluded in the regression to avoid collinearity. The results are presented in Table 4. In the first regression, we only include the four dummy variables. The coefficient estimate of each dummy variable essentially represents the mean return of the event window, which has been reported previously. The benefit of this regression is that the statistical significance of each dummy can be observed directly. The results indicate a positive and significant coefficient for the holiday dummy. The coefficient of the pre-holiday dummy is also positive and statistically significant. However, the coefficients of the post-holiday dummy and the rest of the year dummy are insignificant at conventional levels.

In regression (2), we add the U.S. stock market return as an explanatory variable. The pre-CNY dummy continues to have a positive and significant coefficient, suggesting a strong pre-holiday effect. The coefficient of the holiday dummy, however, becomes statistically insignificant, though it is still positive. Meanwhile, the coefficient of the after-CNY dummy becomes significantly negative. As in regression one, the dummy for the rest of the year remains insignificant. Lastly, the coefficient of the market return represents the average beta of the Chinese ADRs. It is 1.1718 and is significant at the 1% level.

In regression (3), we use the market adjusted return, which is defined as the ADR return minus the S&P 500 index return, as the dependent variable. The results are very similar to those of the second regression. Specifically, the pre-holiday dummy has a significant and positive coefficient, while the post-holiday dummy has a significant but negative coefficient. The holiday and the rest of the year dummies are not significant statistically.

In sum, the regression results show a strong and positive pre-holiday effect. During the CNY holiday, there is a positive effect using unadjusted ADR returns, but the effect becomes insignificant once the market return is controlled or adjusted for. In the post-holiday week, however, there is a strong but negative effect.

Table 4. Regression results

This table presents the results of regression analyses. The independent variables are the four dummies representing the four event windows: the five-day holiday (D_{CNY}), five days prior to the holiday (D_{Before}), five days after the holiday (D_{After}), and the whole year excluding the holiday period ($D_{Whole\ Year}$). R_m is the return of the S&P500 index. In the first two regressions, the dependent variable is the unadjusted average daily return. In the third regression, the dependent variable is the ADR return adjusted by the U.S. market return (R_m). The constant term is excluded in the regressions to avoid collinearity. * indicates significance at the 10% level; ** indicates significance at the 5% level; and *** indicate significance at the 1% level.

Dependent variables	(1) Unadjusted return	(2) Unadjusted return	(3) Market-adjusted return
D_{CNY}	0.238 [4.18]***	0.0411 [0.74]	0.0700 [1.29]
D_{Before}	0.226 [3.97]***	0.1044 [1.90]*	0.1223 [2.25]**
D_{After}	-0.032 [-0.56]	-0.1687 [-3.06]***	-0.1487 [-2.73]***
$D_{Whole\ Year}$	0.053 [0.94]	-0.008 [-0.14]	0.0010 [0.02]
R_m	-	1.1718 [15.32]***	-
Adj. R^2	0.012	0.10	0.004
F-value	8.61	54.51	3.55

3. Analyses using monthly returns

Another commonly discussed seasonality is the monthly effect. The January effect or turn-of-the-year effect, for instance, is a well-documented example of seasonal anomalies. Numerous studies (e.g., Branch, 1977; Keim, 1983; and Roll, 1983) have found that the average return in January is significantly higher than other months of the year.

We investigate this issue with Chinese ADRs by forming an equally weighted portfolio and computing its return for each calendar month for the years 1993-2011. The monthly return results are presented in Table 5. The pattern can also be seen in Figure 1. The month that delivers the highest returns is April, and the mean return in this month is 4.54% with a median of 2.51%. Another good month is July, in which the mean return is 1.714% and the median is 2.075%. On the other hand, August, November, September and June are the months that are associated with substantial negative returns. The mean returns for these four months are, respectively, -5.717%, -4.007%, -3.689% and -3.567%.

Table 5. Monthly returns of Chinese ADRs

This table presents the monthly returns of Chinese ADRs. The return figures are in percentage.

Month	*N*	Mean	Median	Std. dev.
January	573	-1.140	-1.388	18.64
February	580	0.790	0.780	14.01
March	472	-0.405	-0.635	14.93
April	476	4.540	2.509	15.13
May	481	0.030	-0.042	18.86
June	493	-3.567	-2.671	15.97
July	501	1.714	2.075	14.94
August	507	-5.717	-3.271	17.22
September	514	-3.689	-0.389	25.26
October	520	0.565	0.519	20.12
November	537	-4.007	-1.451	19.88
December	551	-0.136	-1.114	16.48
All groups		-0.941	-0.456	18.08

Table 6. Regression results of monthly returns

The table presents the OLS regression results in which the monthly return is regressed on the monthly dummies. The constant term is excluded to avoid collinearity. ** indicates significance at the 5% level; and *** indicate significance at the 1% level.

	Coefficient	*t*-statistic
January	-1.140	-1.52
February	0.790	1.06
March	-0.405	-0.49
April	4.540	5.54***
May	0.030	0.04
June	-3.567	-4.43***
July	1.714	2.14**
August	-5.717	-7.19***
September	-3.689	-4.67***
October	0.565	0.72
November	-4.007	-5.19***
December	-0.136	-0.18
Adj. R^2	0.023	
F-value	13.3	

In order to determine the statistical significance, we run a regression of the monthly returns on the twelve monthly dummies and report the results in Table 6. The results confirm that the monthly returns in April and July are significantly positive, while the returns in August, November, September and June are significantly negative.

We do not have a clear explanation of why the monthly returns of Chinese ADRs demonstrate the pattern discussed above. One possible explanation is that the returns of Chinese ADRs are driven by the U.S. stock market in which they are traded. To investigate this possibility, we look at the monthly returns of the S&P 500 index and compare them side by side with the Chinese ADRs. The results, presented in Figure 1, do indicate some similarity between the two. Their correlation coefficient (not reported), at 0.43, is very high. On the other hand, the correlation between the Chinese ADRs and the Chinese stock market is 0.33.

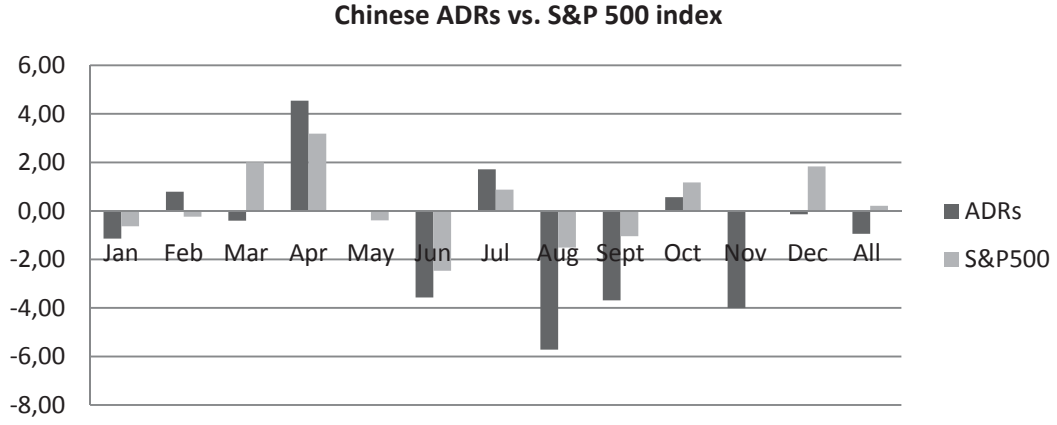

Fig. 1. Monthly returns of Chinese ADRs and S&P 500 index: 1993-2011

Summary and conclusions

The Chinese Lunar New Year (CNY), or the Spring Festival, is the biggest holiday for the Chinese people. The finance literature documents substantial evidence of pre-holiday positive returns of public holidays, perhaps due to positive holiday sentiment. But since the Chinese stock market is closed for a week to celebrate the CNY, it is impossible to offer a direct test of the CNY effect using Chinese domestic share prices.

A unique dataset of Chinese stocks traded in the United States, in the form of American Depositary Receipts (ADRs), allows us to observe the return behavior before, during, and after the CNY. This unique data set allows for a direct test of the CNY effect. To this end, we compute the average daily returns in three event windows: one week prior to the holiday, the holiday week and one week after the holiday.

Using all Chinese ADRs listed on the New York Stock Exchange (NYSE) and Nasdaq from 1993 to 2011, we find that the average daily returns for the three windows are 0.226%, 0.238% and -0.032%, respectively. In comparison, the average daily return for the entire year excluding the Chinese holiday week is 0.053%.

Our results suggest that the Chinese ADRs have significantly higher average daily returns in the week prior to the festival, but lower average returns in the week after the festival, than the rest of the year. There exists a positive holiday effect during the CNY festival, but it becomes statistically insignificant after the U.S. market return is controlled or adjusted.

This paper also investigates the monthly effect of Chinese ADRs. We do not find any January effect. The results indicate that the monthly returns in April and July are significantly positive, while the returns in August, November, September and June are signify-cantly negative.

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