THE CHINESE NATIONAL HOLIDAY'S INFLUENCE ON THE CHINESE STOCK MARKET AND VARIOUS INDUSTRIES: AN EMPIRICAL ANALYSIS

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Abstract

This treatise delves into the ramifications of the Chinese National Holiday on the Chinese stock market and its constituent industries. Employing a sophisticated analytical framework that integrates volatility and the ARMA model as control variables, this study scrutinises the significance of independent variables indicative of the excess return rates on the trading days immediately preceding and succeeding the Chinese National Holiday. The statistical significance of these independent variables substantiates the hypothesis that the Chinese National Holiday exerts a discernible influence on stock returns. Empirical evidence demonstrates that the Chinese National Holiday engenders a significant and positive impact on the overall Chinese stock market and 18 out of 20 selected industries. Moreover, the holiday effect, discernible before 2008, manifests in the form of elevated excess returns for the notably affected stock market and industries, with the effect's significance extending across a broader spectrum of industries.

Keywords: Holiday effect, Chinese stock market, Industrial analysis, ARMA

JEL Classification: G10, G14, G15, G20

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1. Introduction

The Efficiency Market Hypothesis (EMH) stands as a cornerstone theory within contemporary finance and investment discourse. Broadly construed, EMH posits a scenario wherein stocks are presumed to be traded at their anticipated prices, thereby suggesting that investors encounter no opportunity to accrue additional capital gains arising from mispricing in stock transactions. Despite enduring scrutiny and validation across numerous financial markets by economists and statisticians since its inception by Fama, the progenitor of EMH, certain anomalous phenomena persist across diverse markets or nations, allowing certain investors to pursue a real rate of return surpassing expectations. Subsequent elucidation of this phenomenon attributes it to the Calendar Effect, which typically encompasses manifestations such as the weekend, holiday, monthly, and January effects.

In conformity with this pattern, the Chinese stock market has similarly been subject to investigation, revealing the presence of the holiday effect. As articulated by Yi and Liu (2005), the holiday effect exerts a notable influence within the Shanghai stock market, primarily attributable to shifts in investor sentiment engendered by the occurrence of multiple holidays, thereby significantly impacting their investment decision-making processes.

This study endeavours to scrutinise the existence and magnitude of the holiday effect on Chinese National Holidays within the Chinese stock market, propelled by divergent perspectives. Furthermore, it endeavours to account for variance in influence by comparing four indices and twenty industries across three distinct time periods over the preceding decade.

2. Literature review

2.1. The existence of the holiday effect

The holiday effect gained prominence in the past. A comparative analysis was conducted by juxtaposing the index of the day immediately preceding each New York Exchange holiday with the average of the indexes of the two adjacent days. His findings underscored a significant variance in index values across different trading days. Lakonishok and Smidt (1988) subsequently demonstrated the suitability of the Dow Jones Industrial Average (DJIA) as a viable market portfolio for examination, given its

calculation's exclusion of dividends. Upon rigorous testing, they observed abnormal returns surrounding holidays over a span of 90 years.

Further evidence of the holiday effect within the DJIA context was provided by Tsiakas (2010). Tsiakas's analysis spanning from 1962 to 2005 revealed notable mean returns and reduced volatility during pre- and post-holiday periods compared to other trading days. Kim and Park (1994) posited the existence of significant holiday effects in both the Japanese and UK stock markets. However, they noted that the holiday effect in the UK market was less pronounced due to the market's larger standard deviation in returns compared to its Japanese counterpart.

In European contexts, Dodd and Gakhovich (2011) confirmed significant pre- and post-holiday returns across 14 developing Central and Eastern European markets from 1991 to 2011. Marrett and Worthington (2009) verified the holiday effect in the Australian stock market, while McGuinness (2005) corroborated its presence in the Hong Kong market.

In select developing markets, India has been shown to exhibit a holiday effect by Arumugam (1999). His analysis revealed significant post-holiday returns from 1979 to 1985 and significant pre-holiday returns from 1991 to 1997. Notably, he attributed the absence of a holiday effect during 1985-1991 to the transformation of post-holiday effects into pre-holiday effects.

In the South African futures market, Smit and Smit (1998) observed no significant impact of the holiday effect. Even in the United States, the holiday effect was not ubiquitous across all stock exchanges. Vergin and McGinnis (1999) highlighted that from 1987 to 1996, the pre-holiday returns of the S&P 500 and NYSE indices were comparable to returns on other days, whereas the NASDAQ and AMEX indices exhibited additional returns during the same period. They suggested that as investors adapted to the holiday effect, potential abnormal profits tended to diminish.

2.2. Extra rate of return by holiday effect

Recognising the presence of the holiday effect is essential for comprehending abnormal stock returns before or after holidays. Ariel (1990) noted that, compared to non-pre-holiday returns, the mean of pre-holiday returns surpassed those by 9 to 14 times on average for both CRSP value-weighted and equally-weighted indices. In New

Zealand, pre-holiday returns were, on average, 3.8 times higher than non-pre-holiday returns, a smaller margin than the 9 to 14 times observed in the United States (Vos, Cheung, Bishop, 1993). Additionally, Ariel (1990) observed that since the variance of returns before holidays is lower than that of all other trading days, the heightened pre-holiday returns do not entail extra risk. Kim and Park (1994) echoed these findings and further noted that post-holiday returns lack consistent patterns, unlike pre-holiday returns. Furthermore, evidence from the Taiwan market suggested that high pre-holiday returns were unaffected by the risk-return relationship (Teng and Liu, 2013), bolstering Ariel's assertion.

Some experts contend that firm size interacts with the holiday effect to influence return rates. Lakonishok and Smidt (1984) found that large companies experienced higher returns on the last trading day of the year and around Christmas. Keim and Stambaugh (1984) observed a more pronounced weekend effect on small-enterprise stocks compared to large-corporation stocks. Vergin and McGinnis (1999), analysing US stocks from 1987 to 1996, found that the holiday effect was absent in large corporations but present in small corporations. However, and Park (1994) argued that firm size had no impact on average pre-holiday returns. When using size decile portfolios, the holiday effect was more pronounced for large-firm stocks than small-firm stocks. Removing New Year's Day reduced mean returns on small-firm portfolios. Moreover, once the day-of-the-week effect and pre-New Year's Day effect were accounted for, the size effect on average returns before holidays vanished. Kim and Park (1994) concluded that systematic trading patterns around holidays failed to fully explain the holiday effect.

The influence of foreign holidays on domestic stock markets has also been examined. Kim and Park (1994) found no correlation between holiday effects in the UK and Japanese stock markets and those in the US stock market. However, the Chinese Lunar New Year notably impacts other Asian markets such as Hong Kong, Japan, and South Korea. Yen, Lee, Chen, and Lin (2001) utilised the Average Cumulative Return Index and observed consistently rising cumulative returns before and after the Chinese Lunar New Year based on stock indices in Asian markets. Moreover, the Chinese Lunar New Year is anticipated to continue exerting a substantial impact on Asian markets. Additionally, Dumitriu and Stefanescu (2020) suggested that the Extended Holiday Effect was more visible in relatively quiet periods

than in turbulent ones, and it influences especially the stock returns of small-cap companies.

2.3. Holiday effect in the Chinese market

In China, some research confirmed the presence of the holiday effect in the Shanghai stock market. They observed extreme returns before or after holidays, attributing this phenomenon to the diverse emotional responses of investors before and after holidays. Conversely, the Shenzhen Composite Index exhibited a slightly higher return rate than the mean return. Lai & Cho (2016) highlighted relationships between stock returns and corporate financial ratios, indicating that stock market performance could be predicted to some extent. Interestingly, Lai & Wong (2014) also noted that the extra high returns due to the holiday effect were associated with higher risks.

3. Research analysis

3.1. Hypotheses

In this empirical inquiry, we begin by establishing three underlying assumptions:

1. The Chinese stock market is subject to the Chinese National Holiday effect. It is posited that A-shares exhibit exceptional performance on the first trading days preceding and following the Chinese National Holiday, compared to other trading days. Moreover, it is anticipated that the pre-holiday effect will surpass the post-holiday effect concerning excess return rates.
2. Different A-share industries are differentially affected by the Chinese National Holiday. Acknowledging the substantial impact of the Chinese National Holiday on various industries, it is presumed that distinct industries within A-shares will manifest divergent levels of additional return.
3. Different time periods manifest varying degrees of influence from the Chinese National Holiday effect. It is conjectured that the Chinese National Holiday effect may exert varying degrees of influence across three distinct time intervals: 2005-2007, 2008-2011, and 2012-2015. Initially, the significance of the indices and selected industries will be assessed across these periods. Subsequently, the coefficient values pertaining to the indices and selected industries significant across all time periods will be compared within said periods.

3.2. Data collection and measurement

The prevailing focus in holiday effect research typically involves analysing the daily return rates preceding and succeeding specific holidays or encompassing all holidays within a designated timeframe. To facilitate the computation of daily return rates, the daily closing prices of four indices and twenty industry indices in the Chinese stock market spanning from June 7th, 2005, to December 31st, 2015, were collated. These indices comprise the Shanghai Composite Index, Shenzhen Composite Index, Shanghai Shenzhen 300 Index, and Small Medium Enterprise Composite Index (SME index). The selected industries encompass Aerospace, Automobile, Aviation, Banking, Chemical, Coal, Electricity, Gold, Logistic, Media, Medicine, Nonferrous Metals, Nuclear Power, Oil, Scarce Resources, Security, Shipping, Software, Steel, and Telecommunication. Drawing from Vergin and McGinnis's (1999) insights into the US market, where not all indices exhibited a holiday effect, the aim here is to ascertain whether the overall Chinese stock market across the two stock exchanges, encompassing stocks on the main board and those on the SME board, has been influenced by the Chinese National Day. To ensure comprehensive coverage, most indices in the Chinese stock market were incorporated.

Among the twenty selected industries, ten are derived from Marrett and Worthington's (2009) study on holiday effects in Australia, while the remaining industries were chosen based on their perceived significance in the Chinese economy. The dataset was sourced from the Tongdaxin software, which maintains collaborations with numerous security firms.

Subsequent to the collection of closing prices, the daily rate of return is computed utilising the equation (1):

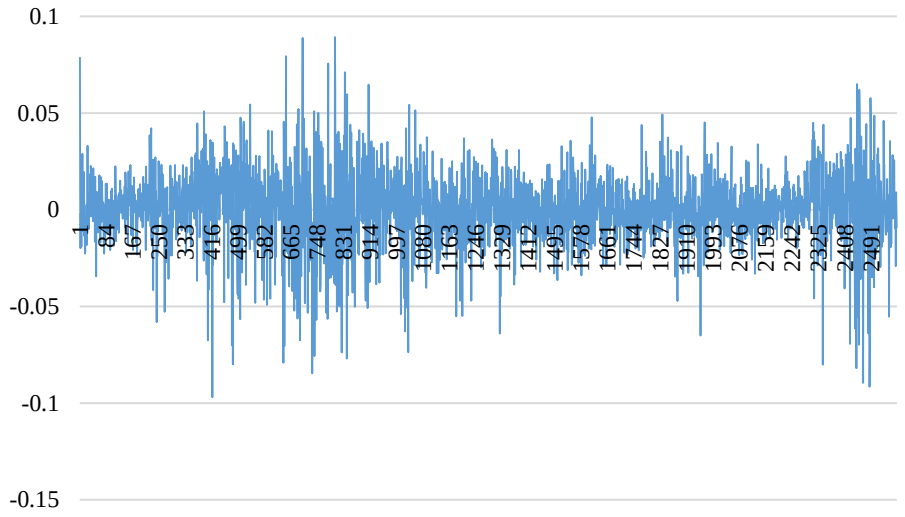
$$R_t = \log_e\left(\frac{P_t}{P_{t-1}}\right) \quad (1)$$

Where: R_t is the rate of return at time t. P_t is the closing price at time t. Figure 1 evinces the rate of return of the Shanghai Shenzhen 300 Index over time t.

Besides, testing the holiday effect one day before and after the holiday requires 2 dummy variables to be added: D_{pre} and D_{post}, and both will be introduced in the following section.

Figure 1

Rate of Return of Shanghai Shenzhen 300 Index



Source: Shanghai Stock Exchange

The model it is used is similar to the model of Marrett and Worthington (2009) and Dodd and Gakhovich (2011), which is:

$$R_t = c + \delta_1 * D_{pre} + \delta_2 * D_{post} + \varepsilon_t \quad (2)$$

Both of their models are to test the significance of the extra rate of return one day before and after the holidays. R_t means the rate of return at time t. c is the constant number and the average rate of return of non-holiday trading date. D_{pre} is the dummy variable of the pre-holiday date. If D_{pre} equals 1, it represents that t is one day before the Chinese National holiday. Otherwise, it equals 0. D_{post} is the dummy variable of the holiday date. If D_{post} equals 1, it represents that t is one day after the Chinese National holiday. Otherwise, it equals 0. δ_n stands for the coefficient of each variable. ε_t is the error term.

Prior to conducting the regression analysis, it is imperative to ascertain whether the daily return rates of all selected samples exhibit stationarity. The unit root test, specifically the Augmented Dickey-Fuller test, is employed for this purpose. The test results indicate that the daily return rates of all indices are stationary.

Acknowledging that various factors can influence daily rate of return, including but not limited to past return rates, news, government policies, or foreign stock market performance, it is necessary to mitigate the impact of past return rates on current rates. To address this, an Autoregressive Moving Average (ARMA) model is applied to Equation (2). A similar approach to test seasonality in the Malaysian stock market was utilized by Pandey (2002). Additionally, recognizing that market volatility can influence return rates, the monthly volatility of the Shanghai Shenzhen 300 index is incorporated into the model. This index is chosen for its ability to reflect the performance of both the Shanghai and Shenzhen stock exchanges simultaneously. Moreover, including daily return rates alone might obscure the additional rate of return before and after holidays, as daily volatility tends to substantially explain the dependent variable.

The determination of the appropriate number of Autoregressive (AR) and Moving Average (MA) terms in the model is crucial. Initially, the regression is conducted with AR (1) and MA (1), and additional AR (p) and MA (q) terms are progressively incorporated until both AR (p) and MA (q) become statistically insignificant. Ultimately, the ARMA (3, 2) model emerges as the most significant. Consequently, the model employed is as follows:

$$R_t = c + \delta_1 * D_{pre} + \delta_2 * D_{post} + \delta_3 * AR(1) + \delta_4 * AR(2) + \delta_5 * AR(3) + \delta_6 * MA(1) + \delta_7 * MA(2) + \varepsilon_t \quad (3)$$

Following the model construction at Equation (3), it is imperative to test for heteroscedasticity in the error term. To facilitate this examination, the ARCH test is employed, revealing that 16 out of 24 samples exhibit heteroscedasticity. Given that most error terms across all samples demonstrate both heteroscedasticity and serial correlation, which can compromise coefficient estimation accuracy, we adopt the Newey-West method to address these issues. Despite some samples exhibiting homoscedastic error terms, the Newey-West method consistently yields coefficients closer to our expectations compared to the Estimation Default and White methods, as per the approach outlined by Marrett and Worthington (2009).

Subsequently, the collected data is inputted into the model to obtain results. The coefficient and t-test probability of the dummy variable serve as pivotal indicators to determine the existence of the Chinese National Holiday effect in the Chinese stock market. If the coefficient of either dummy variable deviate significantly from zero at a

specified significance level (1%, 5%, or 10%), the National Holiday effect is deemed to be present. Under the null hypothesis, the coefficient of either dummy variable is assumed to be zero. Given that the dependent variable is stationary, a t-test is applicable to the entire coefficient.

3.3. Descriptive analysis

All data were sourced from the Shanghai Stock Market and Shenzhen Stock Market, spanning nearly ten years from June 8th, 2005, to December 31st, 2015. The dataset comprises a total of 2572 observations, distributed as 626, 976, and 970 observations for the periods 2005-2007, 2008-2011, and 2012-2015, respectively. The mean serves as a measure of the average daily return, while the standard deviation quantifies the overall daily risk over the selected period.

Examining different market performances, the Shanghai index exhibits the smallest mean and standard deviation, while the SME index demonstrates the highest mean and standard deviation. Table 1 elucidates that over the past decade, the Shanghai Stock Exchange has been more stable than the Shenzhen Stock Exchange, characterized by relatively lower return rates and risks. Moreover, stocks in the SME sector have shown more active performance compared to those in the main board market. This phenomenon suggests a positive correlation between return rates and risks. Among the 20 industries observed over the past decade, the Gold sector exhibits the highest average daily return and daily risk, whereas the Telecommunication sector displays the lowest average return. Furthermore, the Security sector ranks third in terms of return rate, yet its risk is even lower than that of the Telecommunication sector. Comparing the mean and standard deviation of these industries with those of the indices, it is apparent that while their return rates fluctuate, their risks remain relatively stable.

To assess whether the rate of return of the selected samples follows a normal distribution, the Kolmogorov-Smirnov Test is employed. This test serves as a normality test, with the null hypothesis positing that the rate of return is normally distributed. If the asymptotic significance is less than 1%, the null hypothesis is rejected. Given that all significance levels are below 1%, the null hypothesis for normality is rejected, indicating that the rate of return is not normally distributed.

Table 1

Descriptive statistics

Variables	Minimum	Maximum	Mean	Std	Skewness	Kurtosi	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
HS300	-.0970	.0893	.000581	.0189733	-.488	3.092	3.9482	0.0000
Shindex	-.0926	.0903	.000480	.0177486	-.521	3.691	4.4115	0.0000
Szindex	-.0975	.0916	.000600	.0199198	-.437	2.457	3.4518	0.0000
SMEindex	-.0970	.0935	.001012	.0204068	-.592	2.252	3.5847	0.0000
Aero	-.3884	.0894	.000983	.0275512	-1.436	16.745	7.0464	0.0000
Auto	-.6723	.0898	.000631	.0257471	-7.276	181.836	5.0381	0.0000
Avia	-1.2863	.0899	.000441	.0338967	-21.437	807.560	3.5324	0.0000
Bank	-.1049	.0955	.000706	.0204000	-.032	3.760	4.4059	0.0000
Chem	-.5812	.0804	.000605	.0237904	-6.114	139.303	5.0004	0.0000
Coal	-.1031	1.1775	.000910	.0347085	15.074	513.386	6.2160	0.0000
Elec	-.6434	.0883	.000297	.0228600	-8.981	245.130	6.2020	0.0000
Gold	-.1733	.8227	.001255	.0303392	7.616	209.319	4.5866	0.0000
Logi	-.3298	.0954	.001007	.0260204	-1.270	11.597	3.9202	0.0000
Media	-.8122	.0952	.000566	.0288851	-8.971	243.756	5.0907	0.0000
Medic	-1.0948	.0896	.000618	.0291462	-20.816	775.948	7.4285	0.0000
Nonf	-.1018	.9623	.001115	.0322021	10.159	308.389	4.6638	0.0000
Nucl	-.1036	1.0034	.000868	.0300133	14.238	484.373	6.3620	0.0000
Oil	-.5036	.0922	.000114	.0226302	-4.364	97.424	5.8187	0.0000
Scare	-.0943	1.3229	.001215	.0358029	19.455	721.908	5.9875	0.0000
Secu	-.1918	.0953	.000974	.0296158	-.140	2.181	3.3670	0.0000
Ship	-.1054	.3442	.001182	.0301571	.512	8.118	3.5108	0.0000
Softw	-.0979	.0951	.001206	.0227340	-.539	1.811	3.0951	0.0000
Stee	-.0981	.8697	.000690	.0279135	11.549	365.346	5.8445	0.0000
Tele	-.1058	.1215	.000605	.0237471	-.016	3.567	3.8068	0.0000

The abbreviations used are as follows: HS300 for Shanghai Shenzhen 300 Index; Shindex for Shanghai Composite index; Szindex for Shenzhen Composite index; SMEindex for SME index; Aero for Aerospace; Auto for Automobile; Avia for Aviation; Bank for Banking; Chem for Chemistry; Elec for Electricity; Logi for Logistic; Medic for Medicine; Nonf for Nonferrous Metals; Nucl for Nuclear Power; Scare for Scarce Resources; Secu for Security; Softw for Software; Stee for Steel; Tele for Telecommunication.

Source: Shanghai Stock Exchange and Shenzhen Stock Exchange

3.4. Empirical testing

According to our three hypotheses, the Chinese National Holiday effect is examined across three dimensions: Pre-holiday (Pre-H) and Post-holiday (Post-H) effects, industries, and periods. The results are presented in Tables 1, 2, 3, 4 and 5. To streamline the presentation of essential data in the tables, certain independent variables are omitted, resulting in a simplified layout with only six columns.

Testing Hypothesis 1 involves assessing the significance of every pair of dummy variables representing the 4 indices, to ascertain whether the Chinese National Holiday exerts a discernible effect on the Chinese stock market. While all Post-H dummies for the indices prove insignificant at the 10% significance level, the strong significance of the

4 Pre-H dummies indicates the existence of a Holiday effect, particularly on Chinese National Day, over the last decade. Additionally, all significant Pre-H dummy variables exhibit positive coefficients, implying a beneficial effect on stock returns. Notably, the SME index and HS300 index display higher levels of significance compared to the Shanghai Composite index and Shenzhen Composite index. The Shanghai Composite Index shows the lowest extra return rate, approximately 0.66%.

Furthermore, with the same degree of significance, the SME index yields higher excess returns compared to the HS300 index. This finding suggests that firms with relatively smaller sizes may experience a stronger holiday effect on stock performance, consistent with observations in the American market by Vergin and McGinnis (1999) and in the Australian market by Marrett and Worthington (2009).

Moving to the second dimension, industries, as stipulated in Hypothesis 2, Table 1 reveals that 18 out of 20 industries exhibit a notable holiday effect at or below the 10% significance level. Only the Aerospace and Aviation sectors demonstrate no or subtle holiday effects. Among these 18 industries, ten sectors (Banking, Chemistry, Electricity, Logistics, Medicine, Nonferrous Metal, Nuclear, Scarce Resource, Software, Steel) exhibit significance levels below 1%. While most industries primarily display a noticeable Pre-H effect, the Telecommunication sector stands out with a significant Post-H effect only. Additionally, the Medicine and Security sectors demonstrate both significant Pre-H and Post-H effects, with the Pre-H effect prevailing over the Post-H effect based on the coefficient comparison.

Furthermore, among industries exhibiting significant National Holiday effects (both Pre-H and Post-H), the coefficient values elucidate the extent of such effects on excess return rates. The Telecommunication sector boasts the highest excess return rate, nearly 1.9%. The Security sector also prominently reflects the holiday effect, exhibiting both Pre-H and Post-H effects, with the second-highest excess return rate (1.4%) in both categories. Additionally, the Gold, Nonferrous Metal, and Scarce Resource sectors demonstrate excess return rates exceeding 1%, while the Oil sector exhibits the lowest added value of 0.47%, substantially lower than other industries.

Table 2

OLS Regression on Measurement of Constants, Pre-H Dummy (D-pre), Post-H Dummy (D-post) and R^2 for 2005-2015

2005-2015		C	D-pre	D-post	R^2
HS300	Coef.	0.0032	0.0091***	0.0091	1.642%
	Std.e	0.0011	0.0029	0.0076	
Shindex	Coef.	0.0033	0.0066**	0.0086	1.713%
	Std.e	0.0010	0.0026	0.0074	
Szindex	Coef.	0.0030	0.0110**	0.0105	1.604%
	Std.e	0.0012	0.0031	0.0079	
SMEindex	Coef.	0.0034	0.0095***	0.0096	1.556%
	Std.e	0.0013	0.0020	0.0069	
Aero	Coef.	0.0025	0.0062	0.0078	0.851%
	Std.e	0.0019	0.0046	0.0084	
Auto	Coef.	0.0027	0.0109***	0.0057	1.300%
	Std.e	0.0014	0.0034	0.0074	
Avia	Coef.	0.0038	0.0025	0.0030	1.963%
	Std.e	0.0018	0.0092	0.0083	
Bank	Coef.	0.0036	0.0070***	0.0094	1.175%
	Std.e	0.0010	0.0023	0.0110	
Chem	Coef.	0.0028	0.0071***	0.0100	1.613%
	Std.e	0.0014	0.0026	0.0067	
Coal	Coef.	0.0034	0.0091**	0.0099	1.087%
	Std.e	0.0017	0.0044	0.0149	
Elec	Coef.	0.0017	0.0075***	0.0072	0.954%
	Std.e	0.0012	0.0020	0.0058	
Gold	Coef.	0.0033	0.0124**	0.0087	1.372%
	Std.e	0.0019	0.0060	0.0140	
Logi	Coef.	0.0037	0.0080***	0.0088	1.399%
	Std.e	0.0014	0.0027	0.0080	
Media	Coef.	0.0034	0.0097*	0.0047	0.840%
	Std.e	0.0015	0.0057	0.0061	
Medic	Coef.	0.0018	0.0078***	0.0118**	1.001%
	Std.e	0.0014	0.0027	0.0064	
Nonf	Coef.	0.0049	0.0107***	0.0070	1.039%
	Std.e	0.0018	0.0038	0.0125	
Nucl	Coef.	0.0032	0.0075***	0.0059	1.126%
	Std.e	0.0016	0.0025	0.0075	
Oil	Coef.	0.0031	0.0047x	0.0033	1.571%
	Std.e	0.0011	0.0028	0.0077	
Scare	Coef.	0.0045	0.0121***	0.0079	0.686%
	Std.e	0.0018	0.0038	0.0120	
Secu	Coef.	0.0043	0.0138**	0.0138*	0.998%
	Std.e	0.0017	0.0069	0.0078	
Ship	Coef.	0.0038	0.0098*	0.0077	1.587%
	Std.e	0.0021	0.0056	0.0105	
Softw	Coef.	0.0044	0.0092***	0.0095	2.010%
	Std.e	0.0016	0.0029	0.0083	
Stee	Coef.	0.0039	0.0071***	0.0018	1.204%
	Std.e	0.0014	0.0021	0.0086	
Tele	Coef.	0.0029	0.0069	0.0188**	1.343%
	Std.e	0.0013	0.0046	0.0085	

****Significant at the 1% level,**Significant at the 5% level,*Significant at the 10% level.*

The abbreviation above stands for: HS300 for Shanghai Shenzhen 300 Index; Shindex for Shanghai Composite index; Szindex for Shenzhen Composite index; SMEindex for SME index; Aero for Aerospace; Auto for Automobile; Avia for Aviation; Bank for Banking; Chem for Chemistry; Elec for Electricity; Logi for logistic, Medic for Medicine; Nonf for Nonferrous Metal; Nucl for Nuclear Power; Scare for Scare Resource; Secu for Security; Softw for Software; Stee for Steel; Tele for Telecommunication.

Source: Shanghai Stock Exchange and Shenzhen Stock Exchange

Table 3

OLS Regression on Measurement of Constants, Pre-H Dummy (D-pre), Post-H Dummy (D-post) and R^2 for 2005-2007

2005-2007		C	D-pre	D-post	R^2
HS300	Coef.	0.0017	0.0121**	0.0041	2.058%
	Std.e	0.0019	0.0050	0.0078	
Shindex	Coef.	0.0028	0.0079	0.0066	3.308%
	Std.e	0.0018	0.0053	0.0098	
Szindex	Coef.	0.0021	0.0147***	0.0055	3.717%
	Std.e	0.0022	0.0055	0.0093	
SMEindex	Coef.	0.0010	0.0121***	0.0040	0.517%
	Std.e	0.0021	0.0042	0.0049	
Aero	Coef.	0.0024	0.0089	−0.0082	2.058%
	Std.e	0.0012	0.0064	0.0069	
Auto	Coef.	−0.0008	0.0118*	−0.0031	2.397%
	Std.e	0.0028	0.0067	0.0074	
Avia	Coef.	0.0021	0.0120**	−0.0141***	3.510%
	Std.e	0.0024	0.0054	0.0054	
Bank	Coef.	0.0038	0.0119**	0.0383***	3.892%
	Std.e	0.0019	0.0061	0.0148	
Chem	Coef.	0.0009	0.0088*	−0.0021	3.700%
	Std.e	0.0025	0.0052	0.0076	
Coal	Coef.	−0.0010	0.0162*	0.0003	1.097%
	Std.e	0.0027	0.0096	0.0029	
Elec	Coef.	−0.0009	0.0108**	−0.0040	4.899%
	Std.e	0.0023	0.0050	0.0084	
Gold	Coef.	0.0011	0.0093	0.0020	2.625%
	Std.e	0.0035	0.0078	0.0121	
Logi	Coef.	0.0035	0.0063	−0.0026	2.769%
	Std.e	0.0033	0.0073	0.0147	
Media	Coef.	0.0042	−0.0026	−0.0111	4.389%
	Std.e	0.0028	0.0070	0.0073	
Medic	Coef.	0.0008	−0.0001	−0.0060	4.827%
	Std.e	0.0025	0.0060	0.0092	
Nonf	Coef.	0.0024	0.0084	0.0011	4.365%
	Std.e	0.0030	0.0092	0.0085	
Nucl	Coef.	−0.0003	0.0022	−0.0048	5.390%
	Std.e	0.0026	0.0063	0.0082	
Oil	Coef.	0.0050	0.010685**	−0.0079	3.015%
	Std.e	0.0021	0.0050	0.0078	
Scare	Coef.	0.0017	0.0064	−0.0034	4.555%
	Std.e	0.0028	0.0082	0.0090	
Secu	Coef.	0.0035	0.0198	0.0068	1.756%
	Std.e	0.0028	0.0123	0.0153	
Ship	Coef.	0.0000	0.0029	−0.0041	1.923%
	Std.e	0.0033	0.0099	0.0100	
Softw	Coef.	0.0016	0.0064	−0.0077	2.546%
	Std.e	0.0026	0.0086	0.0120	
Stee	Coef.	0.0009	0.0014	−0.0076	4.504%
	Std.e	0.0026	0.0046	0.0077	
Tele	Coef.	0.0012	0.0182	0.0173	2.439%
	Std.e	0.0018	0.0119	0.0148	

****Significant at the 1% level,**Significant at the 5% level,*Significant at the 10% level.*

The abbreviation above stands for: HS300 for Shanghai Shenzhen 300 Index; Shindex for Shanghai Composite index; Szindex for Shenzhen Composite index; SMEindex for SME index; Aero for Aerospace; Auto for Automobile; Avia for Aviation; Bank for Banking; Chem for Chemistry; Elec for Electricity; Logi for logistic, Medic for Medicine; Nonf for Nonferrous Metal; Nucl for Nuclear Power; Scare for Scare Resource; Secu for Security; Softw for Software; Stee for Steel; Tele for Telecommunication..

Source: Shanghai Stock Exchange and Shenzhen Stock Exchange

Table 4

OLS Regression on Measurement of Constants, Pre-H Dummy (D-pre), Post-H Dummy (D-post) and R^2 for 2008-2011

2008–2011		C	D-pre	D-post	R^2
HS300	Coef.	0.0039	0.0108**	0.0076	2.892%
	Std.e	0.0020	0.0049	0.0196	
Shindex	Coef.	0.0036	0.006554*	0.0056	2.990%
	Std.e	0.0018	0.0040	0.0186	
Szindex	Coef.	0.0035	0.0150	0.0088	3.245%
	Std.e	0.0021	0.0045	0.0181	
SMEindex	Coef.	0.0036	0.0087**	0.0065	4.079%
	Std.e	0.0021	0.0035	0.0152	
Aero	Coef.	0.0034	−0.0053	−0.0004	3.188%
	Std.e	0.0023	0.0048	0.0178	
Auto	Coef.	0.0033	0.0108***	0.0073	1.999%
	Std.e	0.0016	0.0034	0.0099	
Avia	Coef.	0.0047	−0.0209*	−0.0034	1.874%
	Std.e	0.0025	0.0123	0.0182	
Bank	Coef.	0.0046	0.0053*	−0.0064	2.740%
	Std.e	0.0019	0.0028	0.0230	
Chem	Coef.	0.0036	0.0074**	0.0103	4.471%
	Std.e	0.0021	0.0036	0.0156	
Coal	Coef.	0.0056	0.0043	0.0241	2.592%
	Std.e	0.0027	0.0062	0.0377	
Elec	Coef.	0.0023	0.0084***	0.0040	4.880%
	Std.e	0.0019	0.0028	0.0131	
Gold	Coef.	0.0037	0.0187	0.0251	2.451%
	Std.e	0.0031	0.0139	0.0353	
Logi	Coef.	0.0037	0.0060	−0.0007	3.772%
	Std.e	0.0024	0.0065	0.0133	
Media	Coef.	0.0040	0.0087***	0.0240	2.496%
	Std.e	0.0024	0.0032	0.0116	
Medic	Coef.	0.0020	0.0103***	0.0127	1.265%
	Std.e	0.0016	0.0032	0.0079	
Nonf	Coef.	0.0057	0.0172**	0.0208	2.293%
	Std.e	0.0028	0.0079	0.0321	
Nucl	Coef.	0.0020	0.0055**	0.0046	4.904%
	Std.e	0.0022	0.0026	0.0170	
Oil	Coef.	0.0031	0.0056	0.0023	3.856%
	Std.e	0.0018	0.0106	0.0106	
Scare	Coef.	0.0049	0.0156**	0.0161	2.812%
	Std.e	0.0025	0.0073	0.0306	
Secu	Coef.	0.0018	0.0150	0.0253**	2.558%
	Std.e	0.0032	0.0147	0.0122	
Ship	Coef.	0.0047	0.0144	0.0002	2.041%
	Std.e	0.0031	0.0146	0.0228	
Softw	Coef.	0.0037	0.0130***	0.0064	2.679%
	Std.e	0.0023	0.0042	0.0157	
Stee	Coef.	0.0042	0.0088***	−0.0002	3.911%
	Std.e	0.0025	0.0033	0.0222	
Tele	Coef.	0.0029	0.0015	0.0140**	1.572%
	Std.e	0.0023	0.0063	0.0060	

****Significant at the 1% level,**Significant at the 5% level,*Significant at the 10% level.*

The abbreviation above stands for: HS300 for Shanghai Shenzhen 300 Index; Shindex for Shanghai Composite index; Szindex for Shenzhen Composite index; SMEindex for SME index; Aero for Aerospace; Auto for Automobile; Avia for Aviation; Bank for Banking; Chem for Chemistry; Elec for Electricity; Logi for logistic, Medic for Medicine; Nonf for Nonferrous Metal; Nucl for Nuclear Power; Scare for Scare Resource; Secu for Security; Softw for Software; Stee for Steel; Tele for Telecommunication.

Source: Shanghai Stock Exchange and Shenzhen Stock Exchange

Table 5

OLS Regression on Measurement of Constants, Pre-H Dummy (D-pre), Post-H Dummy (D-post) and R^2 for 2012-2015

2012-2015		C	D-pre	D-post	R^2
HS300	Coef.	0.0026	0.0084**	0.0102	5.747%
	Std.e	0.0018	0.0042	0.0080	
Shindex	Coef.	0.0027	0.00712**	0.0098	6.051%
	Std.e	0.0018	0.0030	0.0073	
Szindex	Coef.	0.0024	0.0091**	0.0146	4.967%
	Std.e	0.0022	0.0042	0.0119	
SMEindex	Coef.	0.0036	0.0096***	0.0148**	4.033%
	Std.e	0.0023	0.0022	0.0081	
Aero	Coef.	0.0025	0.0200**	0.0329***	2.605%
	Std.e	0.0036	0.0101	0.0068	
Auto	Coef.	0.0029	0.0163**	0.0160**	2.114%
	Std.e	0.0022	0.0073	0.0069	
Avia	Coef.	0.0034	0.0203	0.0202***	2.803%
	Std.e	0.0037	0.0149	0.0050	
Bank	Coef.	0.0017	0.0066**	0.0029	4.496%
	Std.e	0.0015	0.0030	0.0031	
Chem	Coef.	0.0025	0.0088*	0.0154*	4.471%
	Std.e	0.0026	0.0051	0.0088	
Coal	Coef.	0.0030	0.0044	0.0021	0.896%
	Std.e	0.0029	0.0041	0.0106	
Elec	Coef.	0.0016	0.0095**	0.0075	3.100%
	Std.e	0.0023	0.0056	0.0064	
Gold	Coef.	0.0034	0.0131**	−0.0034	1.202%
	Std.e	0.0026	0.0064	0.0112	
Logi	Coef.	0.0031	0.009927**	0.0211***	2.151%
	Std.e	0.0023	0.0039	0.0079	
Media	Coef.	0.0023	0.0201*	−0.0005	0.876%
	Std.e	0.0028	0.0114	0.0081	
Medic	Coef.	0.0020	0.0109**	0.0168**	1.400%
	Std.e	0.0024	0.0046	0.0086	
Nonf	Coef.	0.0043	0.0099**	−0.0001	1.269%
	Std.e	0.0028	0.0046	0.0096	
Nucl	Coef.	0.0048	0.0061	0.0127	1.446%
	Std.e	0.0031	0.0057	0.0089	
Oil	Coef.	0.0013	0.0017	0.0097	2.078%
	Std.e	0.0019	0.0019	0.0062	
Scare	Coef.	0.0044	0.0077	0.0003	0.967%
	Std.e	0.0032	0.0051	0.0099	
Secu	Coef.	0.0053	0.0025	0.0088	3.458%
	Std.e	0.0024	0.0073	0.0128	
Ship	Coef.	0.0029	0.0171**	0.0304***	4.070%
	Std.e	0.0038	0.0081	0.0084	
Softw	Coef.	0.0059	0.0119***	0.0221**	3.797%
	Std.e	0.0028	0.0028	0.0103	
Stee	Coef.	0.0039	0.0043	0.0071	1.134%
	Std.e	0.0023	0.0046	0.0070	
Tele	Coef.	0.0029	0.0061*	0.0230	3.063%
	Std.e	0.0021	0.0034	0.0192	

****Significant at the 1% level,**Significant at the 5% level,*Significant at the 10% level.*

The abbreviation above stands for: HS300 for Shanghai Shenzhen 300 Index; Shindex for Shanghai Composite index; Szindex for Shenzhen Composite index; SMEindex for SME index; Aero for Aerospace; Auto for Automobile; Avia for Aviation; Bank for Banking; Chem for Chemistry; Elec for Electricity; Logi for logistic, Medic for Medicine; Nonf for Nonferrous Metal; Nucl for Nuclear Power; Scare for Scare Resource; Secu for Security; Softw for Software; Stee for Steel; Tele for Telecommunication.

Source: Shanghai Stock Exchange and Shenzhen Stock Exchange

After scrutinising various industries to evaluate hypothesis 3, the ten years is divided into three periods to observe how the Chinese National Holiday effect evolved before and after the financial crisis. Data provided in Table 3, Table 4, and Table 5 reveals that the number of industries exhibiting significant Pre-H or Post-H effects (2005-2007: 10, 2008-2011: 18, 2012-2015: 18) increased after the 2008 financial crisis. Only six sectors, including the Shanghai Shenzhen 300 index, SME index, Automobile, Banking, Chemistry, and Electricity, consistently display significant effects across all three periods.

For the Shanghai Shenzhen 300 Index, the significance level remains stable at or below 5%; however, the added value of the stock return rate declines from 1.21% to 0.84%. Conversely, the significance level of the SME Index rises to 5% in the second period before returning to 1% in the third period. The Shanghai Composite Index exhibited no significant effect until 2008, after which the effect became more pronounced with higher confidence levels and more significant coefficients in the last two periods. In contrast, the Shenzhen Composite Index shows more significant National Holiday Day effects before 2008, with higher coefficients, while it only regains significance after 2012 with relatively lower coefficients. The coefficient value of Pre-H also begins at 1.21%, decreases, and eventually rises to 0.96%, slightly surpassing that of the Shanghai Shenzhen 300 index. For the 4 aforementioned industries, the extra rate of return induced by Pre-H effect starts at its highest level before the financial crisis, decreases after 2008, and then rises again somewhat since 2012.

Another noteworthy finding is that the number of sectors demonstrating evident Post-H effects is only 2 in the first and second time periods, but this figure increases to 9 in the third period. When both Pre-H and Post-H are significant, the coefficient values of Post-H are mostly higher than those of Pre-H, all of which remain above 1.5%.

Consequently, for all three hypotheses, the conclusion is as follows: for hypothesis 1, on the first trading day before and after the Chinese National Holiday, the rate of return tends to exhibit an additional positive performance compared with other trading days, with the pre-holiday return being more significant than the post-holiday return. For hypothesis 2, most industries are affected by the Chinese National Holiday, primarily by the pre-holiday effect, and the extra return rates of industries vary. The Telecommunication industry demonstrates the highest extra return rate (1.9%), while the Oil industry exhibits the smallest (0.47%). For hypothesis 3, different

periods exhibit distinct Chinese National Holiday effects, which broaden after 2007.

4. Discussion

The conspicuous Pre-H effect on the Chinese National Day underscores the immaturity of the Chinese stock market. According to the Efficient Market Hypothesis (EMH), the domestic stock market lacks efficiency, leading to the inability of the public to gather all available information, consequently resulting in abnormal stock return rates.

A pivotal factor contributing to the emergence of the holiday effect is the expectations of public investors. Over the past 11 years, a prevailing positive sentiment towards stock performance during vacations has existed. Currently, the National Holiday stands as the sole 7-day holiday, apart from the Spring Festival, in China, especially after the Labor Day vacation was shortened post-December 2007. Consequently, with increased promotions from firms, more individuals opt for travel or make purchases during the Chinese National Day vacation, potentially bolstering domestic consumption and profits for related businesses. Moreover, investors perceive the Chinese National Holiday as a positive factor for the stock market, leading them to buy and hold stocks before the holidays. To mitigate uncertain risks during vacations, many funds prefer to inflate stock prices before withdrawal. These factors likely contribute to the prevalence of the Chinese National holiday effect primarily before the vacation rather than after.

Furthermore, the Chinese National holiday effect has significantly impacted more industries since the 2008 Financial Crisis, possibly due to investors' tendency towards irrational behaviour during such periods. However, as the Chinese stock market matures, this holiday effect is expected to diminish gradually in the future.

5. Conclusion

The Chinese National Day, one of China's extended holidays, has a considerable influence on people's daily lives, investors' expectations, and trading strategies. To scrutinise our three hypotheses, we selected four stock indices and twenty industries from the Shanghai Stock Exchange and Shenzhen Stock Exchange for data analysis. Employing the Ordinary Least Squares (OLS) method with corrections by Newey-West to account for heteroscedasticity and

autocorrelation, we applied the same model to 24 sectors for four time periods: 2005-2007, 2008-2011, 2012-2015, and 2005-2015.

The empirical results have validated the significance of all our hypotheses. Over the period 2005-2015, the Pre-H effect manifested significantly more frequently than the Post-H effect, with all coefficient values of notable Pre-H effects being positive. Thus, Hypothesis 1 receives affirmative confirmation. Furthermore, as depicted in Table 1, 18 out of 20 industries and four indices exhibited strong significance in Pre-H effects, with coefficient values ranging from 0.66% to 1.24%. These findings substantiate the meaningfulness of Hypothesis 2, indicating that different industries are variably affected by the Chinese National Day. Additionally, it is noteworthy that after 2008, the number of significant Pre-H and Post-H variables increased significantly from 10 to 18 by 2015. Particularly in the same period, the number of significant Post-H variables increased from 2 to 9. However, among those sectors exhibiting Pre-H effects from 2005-2007 to 2012-2015, the first period demonstrated the most significant coefficient values. Overall, these findings corroborate Hypothesis 3.

Our evidence suggests that different industries may exhibit varying significance levels in the Chinese National Day effect, particularly the Pre-Holiday effect. Hence, it would be intriguing for further research to focus on the relationship between market indices and industries and how this factor may affect the added value on stock returns in the market.

This study makes a significant contribution to the existing literature by providing a comprehensive empirical analysis of the influence of Chinese national holidays on the stock market and various industries. Through the application of advanced econometric techniques, including event study methodology and regression analysis, this research quantifies the holiday effect and investigates its differential impacts across various sectors, thereby deepening our understanding of market behaviour during these unique temporal periods.

The findings reveal that the stock market exhibits distinct patterns of volatility and liquidity surrounding national holidays, with varying impacts on different industries. For instance, consumer goods and travel sectors demonstrate heightened activity and price adjustments, while technology and manufacturing sectors may experience more subdued responses. By dissecting these sector-specific reactions, the study highlights the critical role that market

sentiment and consumer behaviour play during holiday periods, often influenced by cultural factors intrinsic to Chinese society.

Moreover, this research underscores the importance of institutional factors and investor psychology in explaining the observed phenomena. The theoretical implications suggest that the holiday effect is not merely a statistical anomaly but a manifestation of deeper behavioural finance principles, including herd behaviour and the disposition effect. These insights open new avenues for future research, encouraging scholars to explore further how cultural and temporal factors shape market dynamics in different contexts.

This study not only enriches the field of finance by providing empirical evidence of the holiday effect in China but also emphasises the necessity for a multidisciplinary approach. By doing so, it lays a solid foundation for future investigations into the complex interplay between cultural events and financial markets, thereby contributing to a more nuanced understanding of market behaviour.

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