

Holiday Trading in China: Before and During the Financial Crisis

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Abstract

Using the most recent data sample, we documented that holiday effects persist in the Chinese security exchanges. Consistent with evidence from other countries, the pre-holiday effect appears to be positively related to firm size and liquidity. We find that this effect is significant with large cap indices but disappears in middle and small cap indices. We also find that the pre-holiday effect became stronger during the financial crisis. A search for possible reasons points primarily towards the illiquidity of smaller stocks and the preference for large cap stocks during the financial crisis.

JEL classification number: C31, G11, G14

Keywords: Chinese stock market, holiday anomaly, financial crisis

1 Introduction

Since late last century, research studies have discovered holiday anomalies in many countries' equity markets. Lakonishok and Smidt (1988) and Ariel (1990) found significantly higher stock market returns prior to holidays. Fabozzi, Ma, and Briley (1994) showed consistent findings in higher pre-holiday, as well as post-holiday, returns in the U.S. stock market. These earlier findings about holiday anomalies are also supported by more recent studies. Sullivan, Timmermann, and White (2001) found increased returns on holidays in the US stock market. The research by Abadir and Spierdijk (2005) also shows a positive relationship between stock market returns and various festivities.

Holiday effect is a major anomaly that is inconsistent with the Efficient Market Hypotheses. The significance and magnitude vary across different countries. Outside the US, mixed results have been reported by different studies conducted in different countries. Cadsby and Ratner (1992) found significant holiday effects in five of ten industrialized countries in their

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research. Hansen, Lunde, and Nason (2005) tested the calendar effects for capital markets in ten industrialized countries and found significantly abnormal pre-holiday returns in the US, Norway, and Italy, and abnormal post-holiday returns in Norway. Marrett and Worthington (2007) found pre-holiday effects in three out of twelve indices from the Australian stock market. The existence of holiday effects in other countries, such as Japan, United Kingdom, Singapore, and Spain are also documented in research studies by Kim and Park (1994), Tan and Wong (1996), Arsal and Coutts (1997), Menue and Pardo (2004), and Lucey (2005). There were also studies which failed to find any evidence of the holiday effects. Blandon (2010) tested calendar anomalies for the LATIBES market, which is formed by Latin-American companies quoted in the Spanish Stock Exchange, and found no holiday effects.

As suggested by many previous researches, the pre-holiday effect can be explained by the fact that holidays affect a human trader's mood (optimistic vs pessimistic) and attitude (aggressive vs conservative). Hirshleifer and Shumway (2003) studied investors' mood through reviewing sunny days or days typically associated with good moods, and found positive abnormal returns on sunny days. Yuan, Zheng, and Zhu (2006) showed that there is a decrease in return on a seven day window around a full moon that would supposedly affect investor's mood. Mehran, Meisami, and Busenbark (2012) also found a significantly positive relationship between joyful Jewish holidays and stock market returns.

Some other researches also consider the "cultural effect" in explaining the holiday effects in Asian stock exchanges. Chan, Khanthavit, and Thomas (1996) found a stronger holiday effect around cultural holidays compared to state holidays with no cultural origins. Cadsby and Ratner (1992), and Yen and Shyy (1993) also found the cultural holidays are related to economically significant abnormal returns in Hong Kong, Japan, Malaysia, Singapore, Korea, and Taiwan.

For the investors intending to exploit a form of seasonality in the stock price evolution, it is very important to analyze its persistence in time. Because many anomalies disappeared after their publications. For example, Dimson and Marsh (1999) showed that the publication of an anomaly could cause its disappearance or reversal. Several papers, including Chong, et al (2005), Marquering, et al (2006), and Wong, et al (2006), also revealed changes in the holiday effects over time for many stock exchanges. And sometimes, as shown by Holden et al (2005), changes were also caused by major economic events such as the financial crises. The only research on the Chinese stock markets by Mitchell and Ong (2006) tested and found the holiday effect in major Chinese stock exchanges using the data prior to 2002.

Since 2008, two major events, that may have significant impact on the holiday effects, have happened. First, the financial crisis started in late 2008 and changed the economic conditions globally. Second, the holiday schedule has been largely reformed. Several public holidays have been created, while several other previously existed holidays have been shortened or extended significantly. In this paper, our data sample, spanning from 2004 to 2014, enables us to investigate the holiday effects before and after the inception financial global crisis. We use daily values of nine most representative indices from major Chinese stock exchanges, in our attempt to identify pre- and post-holiday effects. We test three hypotheses in this paper:

H1. Stock market returns are significantly affected by holiday effects in Chinese stock exchanges.

H2. Pre-holiday effect is more significant with large cap and more liquid companies, which attract more attention from individual investors.

H3. Holiday effects are influenced by major financial event.

The remainder of the paper is organized as follows: Section II describes the data sample and methods. Section III presents and discusses the empirical results. Finally, we summarize the findings in last section.

2 Data and Methodology

Our study includes nine most representative stock indices in China, as shown in the Table I. There are two major stock exchanges in China, Shanghai Security Exchange and Shenzhen Security Exchange. While Shanghai Security Exchange has more large-cap companies and much larger market size, Shenzhen Security Exchange has, other than its main market, two separate markets (Mid-Small Cap Board and ChiNext Board) to accompany financing needs from smaller companies that may not qualify to be listed in the main market. Between these two boards, the ChiNext board has easier listing requirements, smaller average company size, and lower liquidity. Our sample provides a comprehensive coverage of both stock markets. SSE Index and Shenzhen Composite Index cover all listed firms in Shanghai and Shenzhen markets, respectively. We also include the most representative large cap indices for each market, SSE180 for Shanghai, and Shenzhen Component Index for Shenzhen. Small cap companies are also covered by SSE380 for Shanghai, and Mid-Small Cap Board Index and GEM Index (ChiNext Board) for Shenzhen. We also look at the large and small cap indices from both markets combined by including CSI300 and CSI500.

Table 1: Index Descriptions

Index	Description	Inception Date in Our Sample
CSI300	Large caps from Shanghai and Shenzhen stock exchanges	Apr. 8 th 2005
CSI500	Small caps from Shanghai and Shenzhen stock exchanges	Jan. 1 st 2007
SSE180	Large caps from Shanghai	Dec. 31 st 2003
SSE380	Mid-Small caps from Shanghai	Jan. 4 th 2005
SSE Index	All listed firms from Shanghai	Dec. 31 st 2003
Shenzhen Component Index	Large caps from Shenzhen	Dec. 31 st 2003
Shenzhen Composite Index	All listed firms from Shenzhen	Dec. 31 st 2003
Mid-Small Cap Board Index	All listed firms from Mid-Small Caps Board	Jan. 24 th 2006
GEM Index	All listed firms from Growth Enterprise Market Board (ChiNext Board)	Jun. 1 st 2010

All data are collected from Tongdaxin financial database. The sample periods start from the last trading day, Dec. 31st, of 2003, or the inception date of the index, and end on the first trading day, Jan. 5th, of 2015.

Daily market return of the major stock market indices have been computed and categorized based on two major events – Chinese holiday reform and global financial crisis, respectively. The Chinese holiday reform splits the full sample into two groups by Dec. 31st 2007, when the old holiday schedule ended. The first sample, based on the financial crisis, ends on Sept. 15th 2008, when the bankruptcy of Lehman Brothers was announced.

We calculate the returns of the indices using the formula:

$$R_t = \text{Ln}(P_t) - \text{Ln}(P_{t-1})$$

where

- R_t is the return on the day t ;
- P_t is the closing market index price on the day t .

We test pre- and post-holiday effects by forming the regression model with dummy variables:

$$R_t = \alpha + \beta_1 \text{Pre_Holiday} + \beta_2 \text{Post_Holiday}$$

where

- Pre_Holiday is a dummy variable which equals one for the last trading day before a public holiday and zero otherwise;
- Post_Holiday is a dummy variable which equals one for the first trading day after a public holiday and zero otherwise.

3 Testing Holiday Effects

Table II Presents the descriptive statistics of index returns. First of all, as the Wilcoxon Rank-Sum test results show, the difference between returns around holidays and other trading days' returns is significant in all indices. In addition, the pre-holiday effect is usually significant with large cap indices. With composite indices that include firms of all sizes, holiday effects are significant in both Shanghai and Shenzhen security exchanges.

Table 2: Descriptive Statistics

Size Group	Index	Return	Mean	Median	Wilcoxon Rank-Sum Test
Large Cap	CSI300	Pre_Holiday	.00016	0	-2.782 [0.0054]***
		Post_Holiday	.00010	0	-1.562 [0.1183]
		Other Days	.00029	0.00029	
	SSE180	Pre_Holiday	.00015	0	-3.079 [0.0021]***
		Post_Holiday	.00008	0	-1.643 [0.1005]
		Other Days	.00017	0	
	Shenzhen Component Index	Pre_Holiday	.00013	0	-2.489 [0.0128]**
		Post_Holiday	.00010	0	-1.546 [0.1221]
		Other Days	.00021	0	
Composite	Shenzhen Composite Index	Pre_Holiday	.00011	0	-1.978 [0.0479]**
		Post_Holiday	.00014	0	-2.633 [0.0085]***
		Other Days	.00024	.00083	
	SSE Index	Pre_Holiday	.00013	0	-2.616 [0.0089]***
		Post_Holiday	.00009	0	-2.121 [0.0339]**
		Other Days	.00008	0	
Mid-Small Cap	CSI500	Pre_Holiday	.00012	0	-1.292 [0.1965]
		Post_Holiday	.00020	0	-2.403 [0.0163]**
		Other Days	.00020	.00141	
	SSE380	Pre_Holiday	.00011	0	-1.604 [0.1087]
		Post_Holiday	.00016	0	-2.476 [0.0133]**
		Other Days	.00045	.00147	
Small Cap	Mid-Small Cap Board Index	Pre_Holiday	.00016	0	-2.185 [0.0289]**
		Post_Holiday	.00014	0	-2.198 [0.0279]**
		Other Days	.00032	.00101	
Extra Small	GEM (ChiNext)	Pre_Holiday	.00017	0	-1.966 [0.0493]**
		Post_Holiday	.00010	0	-1.505 [0.1323]
		Other Days	.00009	0	

*** represents significance at the 1% level.

**represents significance at the 5% level.

Both findings are confirmed by the full sample regression results, as shown in Table III. In all large cap indices, we found significantly positive returns on both pre-holiday and post-holiday trading days. All results are significant at 5% level or higher. In the composite index group, when firms of smaller sizes are included, pre-holiday effect becomes smaller in magnitude for the Shanghai Index and completely disappears for the Shenzhen Composite Index.

Table 3: Regression Results

Group	Index	Const.	Pre_Holiday	Post_Holiday
Large Cap	CSI300	.00103*** (3.17) [.002]	.00480** (2.35) [.019]	.00497** (2.44) [.015]
	SSE180	.00061** (2.06) [.040]	.00512*** (2.68) [.007]	.00496*** (2.62) [.009]
	Shenzhen Component	.00063** (1.97) [.049]	.00457** (2.21) [.027]	.00483** (2.36) [.018]
Composite	SSE Index	.00066** (2.41) [.016]	.00377** (2.14) [.032]	.00571*** (3.27) [.001]
	Shenzhen Composite	.00138*** (4.34) [.000]	.00334 (1.63) [.102]	.00633*** (3.12) [.002]
Mid-Small Cap	CSI500	.00216*** (5.17) [.000]	.00249 (.98) [.328]	.00680*** (2.67) [.008]
	SSE380	.00196*** (5.70) [.000]	.00289 (1.33) [.184]	.00639*** (2.94) [.003]
Small Cap	Mid-Small Cap Board	.00148*** (3.86) [.000]	.00447 (1.88) [.060]	.00605** (2.54) [.011]
Extra Small	GEM (ChiNext Index)	.00075 (1.35) [.178]	.00564 (1.71) [.088]	.00521 (1.58) [.115]

*** represents significance at the 1% level.

**represents significance at the 5% level.

We investigate the impact of financial crisis on the holiday effects in Chinese effect markets in the Table IV. One trend shown in this table is that the pre-holiday effect becomes more significant with large-cap companies during the financial crisis. Before the financial crisis, the pre-holiday effect is significant in only one of the large-cap indices. After the inception of the financial crisis, the pre-holiday effect became significant in two of three large-cap indices at 5% level. Moreover, the significance in the small cap index before the crisis disappeared during the crisis.

Table 4: Before and During the Crisis

Group	Index Return	Before Financial Crisis			During Financial Crisis		
		Const.	Pre_Hol	Post_Hol	Const.	Pre_Hol	Post_Hol
Large Cap	CSI300	.00194* ** (3.11) [.002]	.00735 (1.64) [.102]	.01426* ** (3.08) [.002]	.00041 (1.12) [.263]	.00219 ** (2.11) [.035]	.00215 (.99) [.323]
	SSE180	.00096* (1.95) [.051]	.00711 ** (1.98) [.048]	.01072* ** (2.98) [.003]	.00031 (.84) [.402]	.00473 ** (2.18) [.030]	.00198 (.92) [.358]
	Shenzhen Component	.00091* (1.72) [.086]	.00517 (1.33) [.182]	.01395* ** (3.60) [.000]	.00040 (1.01) [.313]	.00459 * (1.93) [.053]	.00137 (.59) [.558]
Composite	SSE Index	.00086* (1.80) [.073]	.00516 (1.47) [.141]	.01173* ** (3.35) [.001]	.00047 (1.44) [.149]	.00371 * (1.92) [.055]	.00292 (1.53) [.127]
	Shenzhen Composite	.00138* ** (2.68) [.007]	.00457 (1.22) [.225]	.01250* ** (3.33) [.001]	.00137* ** (3.39) [.001]	.00287 (1.20) [.230]	.00416* (1.76) [.079]
Mid-Small Cap	SSE380	.00272* ** (4.23) [.000]	.00581 (1.36) [.209]	.01432* ** (3.01) [.003]	.00153* ** (3.79) [.000]	.00206 (.86) [.391]	.00481* * (2.03) [.043]
	CSI500	.00293* * (2.07) [.039]	.00872 (.93) [.353]	.02848* ** (2.87) [.004]	.00167* ** (3.95) [.000]	.00172 (.68) [.494]	.00493* * (1.98) [.048]
Small Cap	Mid-Small Cap Board	.00227* * (2.60) [.010]	.01196 ** (1.97) [.049]	.01510* * (2.39) [.017]	.0011** (2.56) [.011]	.00289 (1.16) [.245]	.00419* (1.71) [.088]

*** represents significance at the 1% level.

** represents significance at the 5% level.

We study the impact of the holiday reform and present the results in Table V. Results are very similar to those from the financial crisis samples, most likely due to the large overlap between two time periods. Because the inception date of the GEM Index is after both the holiday reform and financial crisis, it is not included in both regressions.

Table 5: Before and During the Holiday Reform

Group	Index Return	Before Holiday Reform			After Holiday Reform		
		Const.	Pre_Hol	Post_Hol	Const.	Pre_Hol	Post_Hol
Large Cap	CSI300	.00325* ** (5.36) [.000]	.00563 (1.21) [.228]	.01370* ** (2.80) [.005]	.00014 (.36) [.720]	.00503 ** (2.25) [.025]	.00307 (1.39) [.165]
	SSE180	.00154* ** (3.20) [.001]	.00642 * (1.73) [.084]	.01035* ** (2.79) [.005]	.00005 (.14) [.886]	.00501 ** (2.25) [.024]	.00296 (1.34) [.180]
	Shenzhen Component	.00164* ** (3.14) [.002]	.00363 (.90) [.367]	.01399* ** (3.47) [.001]	.00004 (.10) [.921]	.00511 ** (2.13) [.033]	.00242 (1.02) [.308]
Composite	SSE Index	.00148* ** (3.12) [.002]	.00461 (1.26) [.208]	.01199* ** (3.28) [.001]	.00021 (.64) [.522]	.00377 * (1.92) [.055]	.00351* (1.81) [.071]
	Shenzhen Composite	.00195* ** (3.82) [.000]	.00214 (.55) [.585]	.01119* ** (2.85) [.004]	.00102* * (2.52) [.012]	.00390 (1.62) [.106]	.00515* * (2.16) [.031]
Mid-Small Cap	CSI500	.00839* ** (5.77) [.000]	.00306 (.28) [.781]	.02223* (1.76) [.080]	.00146* ** (3.40) [.001]	.00258 (1.01) [.311]	.00636* * (2.52) [.012]
	SSE380	.00365* ** (5.84) [.000]	.00374 (.78) [.438]	.00956* (1.90) [.058]	.00125* ** (3.07) [.002]	.00290 (1.19) [.232]	.00607* * (2.53) [.012]
Small cap	Mid-Small Cap Board	.00469* ** (5.32) [.000]	.00827 (1.24) [.217]	.00861 (1.20) [.229]	.00061 (1.45) [.146]	.00427 * (1.71) [.088]	.00583* * (2.36) [.019]

*** represents significance at the 1% level.

** represents significance at the 5% level.

4 Discussion and Summary

In this research, we intend to answer three questions: first, do holiday effects exist and persist in Chinese stock exchanges? Second, how do liquidity and firm size impact holiday effects? Lastly, do global financial crisis and holiday reform affect holiday effects?

We find that holiday effects have been strong and significant in Chinese stock exchanges since 2004. There has been a significantly positive post-holiday return in every index from

Shanghai Security Exchange and the main board of Shenzhen Security Exchange. The pre-holiday returns exist in indices representing large-cap companies with higher liquidity, but disappear in other indices of smaller firm size and lower liquidity. As suggested by previous researches that the pre-holiday effect can be explained by individual investors having better mood, our finding is consistent with the fact that larger companies usually attract more attention and interest from individual investors. This finding is also confirmed by the change in the results after the financial crisis.

Furthermore, we find that the financial crisis significantly impacts the holiday effects. First, the strong post-holiday effect shown in all indices before crisis completely disappeared from all large-cap indices and significantly decreased in other indices. Second, the pre-holiday effect became more significant among large-cap indices and disappeared in other indices during the crisis. This can be explained by the fact that individual investors prefer to invest in larger and safer companies during the crisis. The holiday reform sample regressions show very similar results as in the financial crisis regressions. This may be explained by a large overlap between two time periods.

In summary, we demonstrate that holiday effects still exist in Chinese stock markets, and that pre-holiday effect became stronger for large cap stocks during the financial crisis.

References

- [1] Abadir, K. and Spierdijk, L., Liquidity Constraints and the Demand for Assets: An Application to the Festivity Effect, working paper, (2005).
- [2] Ariel, R., High stock returns before holidays: Existence and evidence on possible causes, *Journal of Finance* 45(5), (1990), 1611 – 1626.
- [3] Arsad, Z., Coutts, J. A., Security price anomalies in the London International Stock Exchange. *Applied Financial Economics* 7(5), (1997), 455 - 464.
- [4] Blandon, J., Return' s Seasonalities in the LATIBEX Market. *Revista de Analisis Economico*, Vol. 25, No.1, (2010), 3-14.
- [5] Cadsby, C. B. and M. Ratner, Turn-of-the-month and pre-holiday effects on stock returns: Some international evidence, *Journal of Banking and Finance* 16(3), (1992), 497 – 509.
- [6] Chan, M. W. L., Khanthavit, A., & Thomas, H., Seasonality and cultural influences on four Asian stock markets. *Asia Pacific Journal of Management*, 13, (1996), 1-24.
- [7] Chong, R., Hudson, R., Keasey, K., and Littler, K., Pre-holiday effects: International evidence on the decline and reversal of a stock market anomaly. *Journal of International Money and Finance*, 24, (2005), 1226-1236.
- [8] Dimson, E. and Marsh, P., Murphy's law and market anomalies. *Journal of Portfolio Management*, 25, (1999), 53-69.
- [9] Fabozzi, F., Ma, C. and Briley, J., Holiday Trading in Futures Markets, *Journal of Finance*, Volume 49, Issue 1, (1994), 307-324.
- [10] Hansen P., Lunde A., and Nason J., Testing the Significance of Calendar Effects, Federal Reserve Bank of Atlanta, Working Paper, (2005).
- [11] Hirshleifer D. and Shumway T., Good Day Sunshine: Stock Returns and the Weather, *The Journal of Finance*, Vol. 58, No. 3, (2003), 1009-1032
- [12] Holden, K., Thompson, J. and Ruangrit, Y., The Asian crisis and calendar effects on stock returns in Thailand. *European Journal of Operational Research*, Elsevier, vol. 163(1), (2005), 242-252..

- [13] Kim, C.W. and Park, J. (1994), Holiday Effects and Stock Returns: Further Evidence, *Journal of Financial and Quantitative Analysis*, 29, 145-157.
- [14] Lakonishok, J. and Smidt, S., Are Seasonal Anomalies Real? A Ninety-Year Perspective, *Review of Financial Studies*, 1, (1988), 403-25.
- [15] Lucey, B.M., Are local or international influences responsible for the pre-holiday behaviour of Irish equities? *Applied Financial Economic*, 5: 6, (2005), 381 — 389
- [16] Marquering, W., Nisser, J., and Valla, T., Disappearing anomalies: A dynamic analysis of the persistence of anomalies. *Applied Financial Economics*, 16, (2006), 291-302.
- [17] Marrett, G. and Worthington, A. C., An empirical note on the holiday effect in the Australian stock market, 1996-2006, University of Wollongong, Faculty of Commerce – Papers, (2007).
- [18] Mehran, J., Meisami, A. and Busenbark, J., "L'Chaim: Jewish holidays and stock market returns", *Managerial Finance*, Vol. 38 Iss: 7, (2012), 641 - 652
- [19] Meneu, V. and Pardo, A., Pre-holiday Effect, Large Trades and Small Investor Behaviour. *Journal of Empirical Finance*, Volume 11, Issue 2, (2004), 231-246.
- [20] Mitchell, J. and Ong, L., Seasonalities in China's Stock Markets: Cultural or Structural?, IMF working paper, (2006).
- [21] Sullivan, R., Timmermann, A. and White, H., Dangers of data mining: the case of calendar effects in stock returns, *Journal of Econometrics*, Volume 105, Issue 1, November 2001, (2001), 249-286.
- [22] Tan, R., Wong, N.T., Calendar Anomalies In The Singapore Stock Market. *Singapore Journal of Stock Exchange*, (1996), 6-13.
- [23] Wong W., Agarwal, A. and Wong, N., The Disappearing Calendar Anomalies in the Singapore Stock Market. *The Lahore Journal of Economics* 11:2, (2006), 123-139.
- [24] Yen, G., and Shyy, G., Chinese New Year Effect in Asian Stock Markets, *NTU Management Review*, Vol. 4, (1993), 417–36.
- [25] Yuan, K., Zheng, L. and Zhu Q., Are investors moonstruck? Lunar phases and stock returns, *Journal of Empirical Finance*, vol. 13, issue 1, (2006), 1-23