Pre-holiday and Pre-weekend Effects: China's Evidence on Stock Market Anomaly

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Abstract

The pre-holiday effects and pre-weekend effects are both well-known calender anomalies. This paper extends previous work, and examine whether the effects exist in China's market by using the data from 2000 to 2012. It shows pre-holiday effects are significant, while the pre-weekend effects are insignificant, or even negative. Furthermore, the trends of the effects are also tested, and it shows that the trends are relatively stable in the sample time period.

Index Terms

China, Pre-holiday effects, Pre-weekend effects, Stock market, Anomaly

I. INTRODUCTION

The pre-holiday effect, in which stock returns are higher on the day preceding a holiday, and the pre-weekend effect, in which stock returns are higher on the day preceding a weekend are two of the best known of the calendar effect anomalies with its existence having been empirically confirmed in a number of studies [1].

As for the pre-holiday effect, Charles [2] proves that the pre-holiday effects are significant in Canada, Japan, Hong Kong, and Australia. Liano [1], [3] finds out there is the high returns on pre-holiday trading days for a sample period of 1973-1989.

Meanwhile, as for the pre-weekend effect, Lakonishok [4] gives us a evidence in the U.S. market by using the data of 90 years on the Dow Jones Industrial Average. Nour Abu-Rub [5] find the evidence of pre-weekend effect in the Palestine Securities Exchange(PSE) during year 2006 to year 2010 by applying the $ANOVA$.

To explain these effects, Pattengill [1], [6] thinks these effects may come from closing effect. He also gives us example of other recurring return patterns involve high returns at market closings. Keim [1], [7] shows the effects may be from the systematic patterns, to some extent.

In addition, in Chong's [1] study, it not only shows the pre-holiday effect in U.S., U.K. and Hong Kong markets, but also refers that there is the evidence of diminishing of this effect due to the efficiency of the market.

In our paper, we aim to figure out whether the pre-holiday effect and the pre-weekend effect exist in China's market, as well as the trend of the effects. We presents our methodology and source of data in Section II. By using these, we get the empirical evidence in Section III. Finally, we get our conclusion in Section IV.

II. METHODOLOGY AND DATA

To find out whether there is the difference of means in returns between pre-holiday days, pre-weekend days as well as normal days, we partially follow Duncan [8], and give the following hypothesis:

H1 - mean of returns on days of kind 1 is higher than that on days of kind 2.

In which, both days of kind 1 and kind 2 refer to the days we mentioned above - pre-holiday days, pre-weekend days and normal days.

Similarly, to find out whether there is the difference of frequency of days with positive returns, between pre-holiday days, pre-weekend days as well as normal days, we give the hypothesis:

H1 - frequency of days with positive returns during days of kind 1 is higher than that during days of kind 2.

In which, both days of kind 1 and kind 2 refer to the days we mentioned above - pre-holiday days, pre-weekend days and normal days.

In addition, whatever the cause of the pre-holiday and the pre-weekend effects, the effect will diminish if it exists some level of efficiency in the markets. Indeed, Tan and Tat [1], [9] presented that the pre-holiday effect had diminished for the Singapore market in the time period 1975-1994. Chong [1] pointed out the effect had also weakened for the U.S market, but not yet for either U.K or Hong Kong market. Marginally following them, we draw two hypotheses:

H1 - the pre-holiday effect has declined across past decade

and,

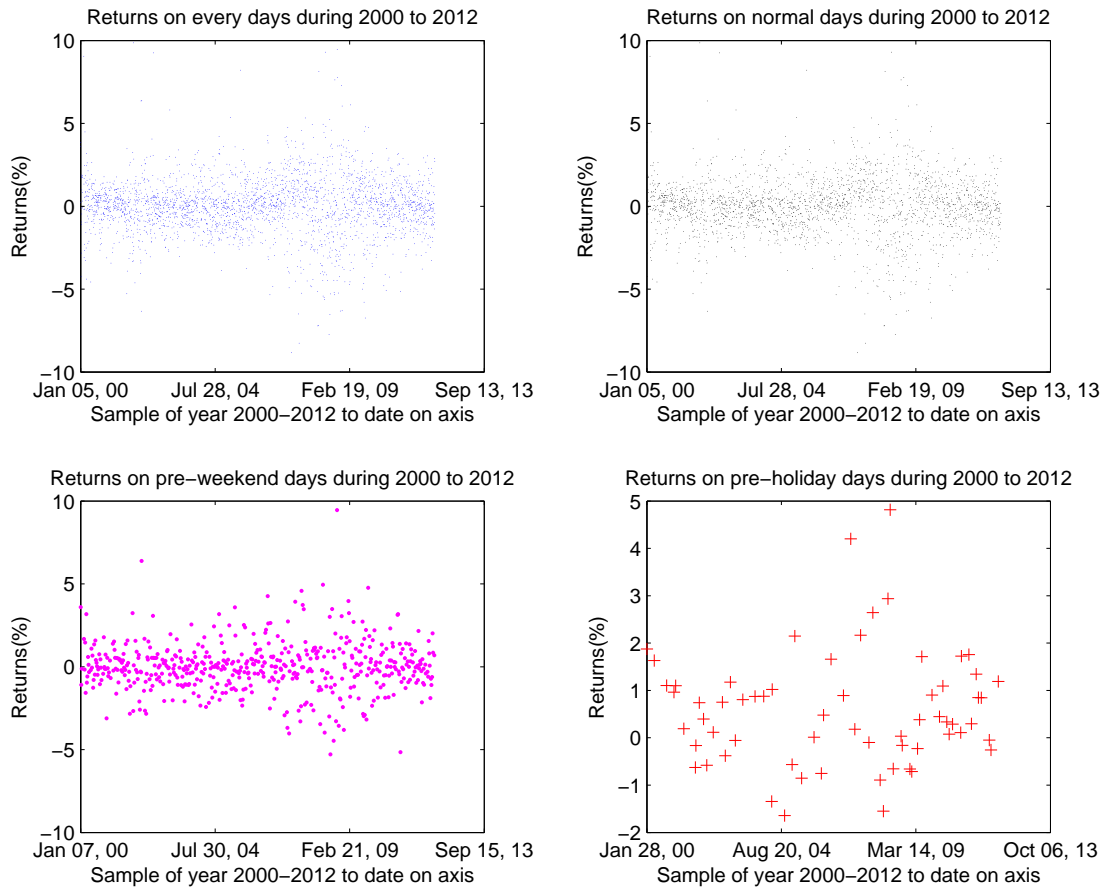H1 - the pre-weekend effect has declined across past decade

Fig. 1.

In testing the above hypothesis, daily stock index returns are drawn from Yahoo Finance. The sample period, January 2000-January 2012, is the longest time period that we can get. To represent the whole market in China, the China Shanghai Composite Index(SHBI) [10] is used, and the time serious figure is plotted in Figure 1, Page 2.

In this analysis, pre-weekend days are defined as the days before the stock market closed lasting 2 days, pre-holiday days are defined as the days before the stock market closed lasting more than 2 days, and the normal days are defined as the stock market is not closed in the following days.

III. EMPIRICAL RESULTS

Partially following the previous methodology [1], [11], the trading days can be divided into three parts: normal days, pre-weekend days and pre-holiday days. In addition, sample means, standard deviations [12] and the frequency of days with positive returns , of the three subsets are calculated in Table I, as well as the t-statistic [13] correspondingly in Table II.

TABLE I

SAMPLE MEANS, STANDARD DEVIATIONS AND FREQUENCY OF POSITIVE RETURNS DAYS, FOR THE NORMAL, PRE-WEEKEND AND PRE-HOLIDAY SUBSETS OF DAYS DURING 2000-2012[A]

Period 2000-2012	Normal days	Pre-weekend days	Pre-holiday days
Panel A: means and standard deviations			
Mean	0.0219%	0.0025%	0.5858%
Standard deviation	1.7206%	1.5128%	1.2145%
Number of days	2285	539	63
Panel B: frequency of advances			
Positive return days among these days	1221	261	43
Fraction positive return days ammong these days	0.5344	0.4842	0.6825

[a] See Figure 1 in Page 2.

TABLE II

T-TEST FOR THE DIFFERENCE IN THE MEANS OF RETURNS AS WELL AS THE FREQUENCY OF POSITIVE RETURNS DAYS, FOR THE NORMAL, PRE-WEEKEND AND PRE-HOLIDAY SUBSETS OF DAYS DURING 2000-2012

Period 2000-2012	Normal days	Pre-weekend days	Pre-holiday days
Panel A: t-Statistic[a] for difference of the means			
Normal days	0	-0.242	2.583***
Pre-weekend days	0.242	0	2.951***
Pre-holiday days	-2.583	-2.951	0
Panel B: t-Statistic[a] for difference of number of positive return days			
Normal days	0	-2.097	2.329***
Pre-weekend days	2.097**	0	2.996***
Pre-holiday days	-2.329	-2.996	0

* Significant at 10% level;
** Significant at 5% level;
*** Significant at 1% level.
[a] t-Statistic here is right tailed.

The right-tailed t-test for difference of means in returns between normal days, pre-weekend days and pre-holiday days are shown in Table II, Panel A. It assumes that the returns in the three samples of data are independent and that the return generating process has been constant over the period of the sample. A non-parametric test, less sensitive to these assumptions, can be carried out under the assumption that the pre-holidays are merely random draws from the full sample of trading days in the investigation period [1]. Meanwhile, Table II, Panel B, similar with Panel A, applies the right-tailed t-statistic to test the difference of frequency of days with positive returns between normal days, pre-weekend days and pre-holiday days.

The mean of the pre-holiday days returns is 26.70 and 237.21 times of the means of the normal days returns and the pre-weekend days returns, respectively. The corresponding right-tailed t-statistics show that mean of returns during pre-holiday days is higher than the means of returns during normal days and pre-weekend days, both significant at 1% level. In addition, the t-statistics in Panel B shows that frequency of days with positive returns during normal days is higher than that of such days during pre-weekend days, significant at 5% level, as well as the frequency of days with positive returns during pre-holiday days is higher than that of such days during pre-weekend days and normal days, both significant at 1% level. In summary, over the whole period of investigation, there is a strong evidence that in pre-holiday days, it is easier to get higher returns, and marginally significant evidence that normal days is more likely to get positive returns than pre-weekend days.

To examine whether the effect had diminished over the period under investigation, the following time series regression were run over the full investigation period:

$$R_t = \alpha_0 + \alpha_1 D_{0,t} + \alpha_2 D_{0,t} T_t + \alpha_3 D_{1,t} + \alpha_4 D_{1,t} T_t + u_t \tag{1}$$

where R_t is the daily index return at date t. $D_{0,t}$, $D_{1,t}$ are dummy variables. $D_{0,t}$ equals to 1 if date t is a pre-weekend day, and equal to 0 otherwise. Similarly, $D_{1,t}$ equals to 1 if date t is a pre-holiday day, and equal to 0 in other situations. T_t is a time trend variable equal to the elapsed number of trading days from the start of the investigation [1].

The results of the regressions are shown in Table III. It shows that there is no significant trend to change of the difference in means of returns between pre-holiday days and normal days, as well as pre-weekend with normal days, due to the insignificant t-Statistic.

TABLE III

RESULTS OF THE TIME SERIES REGRESSION: $R_t = \alpha_0 + \alpha_1 D_{0,t} + \alpha_2 D_{0,t} T_t + \alpha_3 D_{1,t} + \alpha_4 D_{1,t} T_t + u_t$

	α_0	α_1	α_2	α_3	α_4
Value	0.0220	-0.0324	5.8604×10^{-6}	0.0459	4.3655×10^{-5}
t-Statistic	(0.6299)	(-0.2176)	(0.1024)	(1.0360)	(0.2691)
$R^2 = 0.0025$	F-Statistic=1.8081				

[*] Significant at 10% level;
[**] Significant at 5% level;
[***] Significant at 1% level.
[a] t-Statistic here is two tailed.

In summary, the results of this section are as follows. First, over the whole investigation period, there is strong evidence that returns on pre-holiday days are higher than those on both pre-weekend days and normal days. Second, as for the frequency of days with positive returns, pre-weekend days are lower than normal days, as well as pre-holiday days are higher than both pre-weekend days and normal days. Third, the difference of returns on pre-holiday days, pre-weekend days and normal days have not evidently changed during this investigation period, in China.

IV. CONCLUSIONS

The paper has tested the pre-weekend effect and the pre-holiday effect in China during 2000-2012. In addition, it has also tested whether the two effects have been diminished during this time period.

The pre-holiday effect is statistically significant. Both the returns and the frequency of days with positive returns in pre-holiday days are higher than those of pre-weekend days and normal days.

Meanwhile, the pre-weekend effect is not only insignificant, but also negative in some extent. The frequency of days with positive returns in normal days is significantly higher than that of pre-weekend days.

What's more, the trend of the difference in returns between pre-holiday days, pre-weekend days and normal days keeps relatively stable in the time period - form 2000 to 2012 due to the regression. In China, the pre-holiday effect as well as the pre-weekend effect has not diminished during last decade.

The possible explanation of the negative pre-weekend effect [14]–[16] may be caused by the uncertainty during the weekend. What's more, the relatively short time for stock market contributes to the insignificance of the pre-weekend effect.

As for the relatively steady of both pre-holiday effect and pre-weekend effect, it shows the efficiency of China's market is not enough [17], [18]. The other explanation is that the time period is too short to present the trend, which suggest that the need for the further research.

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