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# The pre-holiday effect and positive emotion in the Taiwan Stock Market, 1971-2011

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## ABSTRACT

This study presents a behavioural explanation of the pre-holiday effect. For the period 1971 to 2011, we first find that the mean pre-holiday return in Taiwan's major stock market index is statistically significantly higher than the mean non-pre-holiday return. Second, the pre-holiday event offers a return that differs from that on non-pre-holidays in an economically significant manner. Third, the high return on pre-holidays is not attributable to risk, other calendar anomalies, nor macroeconomic factors. Finally, the pre-holiday effect is related to proxies for positive emotion among investors. We conclude that these findings are consistent with the positive emotion and the pre-holiday effect hypothesis.

## 1. INTRODUCTION

Positive emotion provides a potential explanation for higher stock returns on pre-holidays compared with other days. Thaler (1987) proposes that explanations for the pre-holiday effect might incorporate psychological factors. High stock returns before holidays may be due to positive emotions (Boyle *et al.*, 2004). Fabozzi *et al.* (1994) conclude that positive returns surrounding holidays imply positive holiday sentiments. Psychology provides the most promising explanation for the calendar anomaly (Jacobs and Levy, 1988), yet although previous papers have documented the role of investor sentiment in return anomalies before holidays, the literature that tests the ability of emotions in explaining the pre-holiday phenomenon is minimal. Therefore, we offer further empirical evidence on this investor emotion-based explanation for the pre-holiday effect.

Several psychological, behavioural, and social studies suggest that investors hold a positive emotion or mood before a short holiday (Christie and Venables, 1973; Rossi and Rossi, 1977; Stone *et al.*, 1985). A positive emotion before holidays could induce higher expectations for future cash flows or an underweighting of risk (Boyle *et al.*, 2004). The literature on seasonality anomalies indicates that holiday euphoria increases traders' willingness to invest in risky assets (e.g., Jacobs and Levy, 1988; Rystrom and Benson, 1989; Pettengill, 1993; Frieder and Subrahmanyam, 2004). Thus, if a large proportion of investors are inherently optimistic on pre-holidays, then the positive influence on stock prices will be significant.

We examine herein the returns on the TAIEX (Taiwan Stock Exchange Capitalization Weighted Stock Index) during the period 1971-2011 to investigate the pre-holiday effect and focus on examining a behavioural

explanation for this effect. International stock markets differ in terms of compositions. In the Taiwan stock market – the world's twelfth largest financial market by market capitalization – individual investors account for approximately 90% of the trading volume, while each group of institutional investors (including corporations, dealers, foreigners, and mutual funds) accounts for between 2% and 4% roughly (Barber *et al.*, 2009). According to the Taiwan Stock Exchange Fact Book, individual investors accounted for between 56% and 59% of total stock ownership in the late 1990s and 42% in 2006. The high levels of individual trading and ownership observed in Taiwan provide an ideal context for examining a behavioural explanation for the calendar anomalies since individual investors are more subject to psychological biases, causing market mispricing and inefficiency (Daniel *et al.*, 2002).

We analyse six Taiwanese public holidays on which most people do not work and the stock market is closed: New Year, Chinese New Year, Tomb Sweeping Day, Dragon Boat Festival, Mid-Autumn Festival, and National Day. These holidays are different from Western ones and usually celebrated in Chinese societies, including mainland China and Hong Kong. Christmas Day is not a public holiday in Taiwan and so it is not included in the analysis. Our analysis contributes to the knowledge of understanding of non-Western holidays on an Asian market.

Baker and Stein (2004), Frieder and Subrahmanyam (2004), and Baker and Wurgler (2006, 2007) claim that optimism among investors is positively associated with turnover and volume (liquidity). The Advance-Delay Line (ADL), an indicator of the number of rising stocks vs. declining stocks, represents whether investors are more positive on the future economic environment (Hsu, Kuo, Peng, and Chen, 2010). When the former is greater than the latter, investors are more positive. Lee, Shleifer and Thaler (1991), Chopra, Lee, Shleifer, and Thaler (1993), and Gondhalekar and Mehdiian (2003) argue that concurrent optimism among traders is positively related to returns on small stocks. We therefore examine the relationship between the pre-

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\*Respectively Department of Finance, Chung Yuan Christian University, 200 Chung Pei Rd., Chung Li 32023, Taiwan and Department of Business Management, National Sun Yat-sen University, 70 Lienhai Rd., Kaohsiung 80424, Taiwan.  
Email: andyteng@cycu.edu.tw; vwliu@mail.nsysu.edu.tw

holiday effect and emotion among investors under these proxies.

We first find that the mean pre-holiday return is statistically significantly higher than the mean non-pre-holiday return for the TAIEX. Second, the difference between the mean pre-holiday return and the mean non-pre-holiday return is also economically large. Third, the standard deviation of pre-holiday returns is significantly lower than that for non-pre-holiday returns, demonstrating that the risk factor does not contribute to the high return on pre-holidays. Fourth, we control for other calendar anomalies and the U.S. market return in the regression analysis and confirm that the pre-holiday effect is not attributable to other financial anomalies and macroeconomic factors. Finally, findings based on proxies for investor emotion (turnover, volume, ADL, and small stock returns) suggest that the pre-holiday effect is more pronounced under periods of positive emotion or optimism among investors. These findings have not been documented in the prior literature and offer strong support for the pre-holiday-emotion hypothesis.

The paper is organized as follows. Section 2 documents the relationship between the pre-holiday effect and positive emotion. Section 3 describes the data and methodology. Section 4 presents the empirical results. Section 5 concludes.

## 2. RELATIONSHIP BETWEEN POSITIVE EMOTION AND PRE-HOLIDAY EFFECT

Several psychological, social, and behavioural studies based on the West suggest that the arrival of a short holiday has a positive impact on moods in general. In an early study, Farber (1953) presents that Saturday is rated as the favourite day of the week by college students in U.S., because it is a free day and a day for dates and festivities. He also shows that a neat gradient exists with a steadily rising outlook from Monday through Friday and notes that "The week-end might conceptually be viewed as a goal, with a goal-gradient of feeling-tone as it is approached" (page 255).

Investigating the meaning basis of verbal synaesthesia, Pecjak (1970) obtains that the strongest relations occur between anger and Monday, laughter and Saturday, love and Saturday, passion and Saturday, and happiness and Sunday in an emotion-day series on groups of subjects from Europe and the U.S. Rossi and Rossi (1977) report that positive moods peak in the ovulatory phase and on weekends, while negative moods peak in the luteal phase of the menstrual cycle from a sample of undergraduate student in the U.S. Christie and Venables (1973) show that mood (or euphoria) scores are the lowest on Monday mornings and highest on Friday evenings for subjects in U.K. Froggatt (1970) studies short-term absence from work and finds absences are

consistently the most prevalent on Monday and the least on Friday among industrial personnel and clerks in government service from U.K.

Stone, Hedges, Neale, and Satin (SHNS) (1985) examine the daily moods of married men (average age of 42) in the U.S. who report their moods at the end of each day, calculated by established mood measures used in psychological research. SHNS find weekends to present periods of more positive moods and Monday's mood is worse than Friday's. Monday is particularly chosen as the day with the worst mood by 65% of the subjects; 9% choose Tuesday, 5% Wednesday, 2% Thursday, 4% Friday, 2% Saturday, and 5% Sunday. On the other hand, Monday is chosen as the best day by only 2%, while 35% choose Friday, 25% Saturday, and 28% Sunday.

Previous studies from the West have attempted to link positive emotion to the pre-holiday effects. Thaler (1987) summarizes results of studying the Dow Jones Industrial Average (DJIA) pre-holiday returns and suggests that explanations for the pre-holiday effect may incorporate psychological factors, such as good moods before a holiday. Analysing studies from U.S. stock markets, Jacobs and Levy (1988) argue that psychology provides the most promising explanation for the calendar anomaly and that holiday euphoria leads to short-covering and general buying pressure. Boyle *et al.* (2004) examine the New Zealand stock market and posit that high stock returns before holidays may be due to positive emotions and optimistic expectations. Testing future contracts in the U.S. markets, Fabozzi *et al.* (1994) conclude that positive returns surrounding holidays imply positive holiday sentiments. Studying the open-market occurrences in the U.S. equity markets for St. Patrick's Day and the Jewish High Holy Days of Rosh Hashanah and Yom Kippur, Frieder and Subrahmanyam (2004) propose that since people are in an uplifting spirit during festive occasions and await them in good spirits, traders' confidence and willingness to invest in risky assets increase.

Some Western researchers provide more detailed explanations for the relation between emotions and the holiday effect. For instance, Boyle *et al.* (2004) propose that the pre-holiday phenomenon is one of those exogenous economically-neutral events that psychological research shows may have a causative effect on investor behaviour. Since such events are independent of fundamentals, they cannot have a systematic effect on stock prices in an efficient market. Nevertheless, if markets are not efficient and thus subject to emotional influences, then these events may impact prices by generating irrational impulses in investor behaviour. Consequently, excessive optimism or positive emotion prior to holidays could induce higher expectations for future cash flows or may under-weight the risk or discount rates related to future

cash flows. Therefore, returns should be higher before a holiday.

Similar to the behavioural explanation with the pre-holiday effect, researchers from the West offer a significant amount of literature on the psychological link to the weekday effect. Examining the rationale for the day-of-the-week effect, Rystrom and Benson (1989) argue that investors may often act irrationally, and emotions and moods may influence their economic decisions. If these emotions vary across days of the week, then they could produce differing degrees of optimism and pessimism through the days of the week, thus resulting in differing returns to capital assets over the days of the week. In particular, if people feel blue on Monday and are more pessimistic about the outlook for the securities they hold, then they are less apt to buy on Mondays than on other days, whereas more benign attitudes later in the week lead to relatively greater demand for securities.

Siegel (1998) also finds a link between people's feelings and day-of-the-week returns in the U.S. financial markets. In an experimental study of the investor trading behaviour of U.S. college students, Pettengill (1993) shows that Friday investors have a higher proportion of their wealth invested in the riskiest groups of securities than do Monday investors, which is consistent with the view that positive moods on Fridays could cause positive shifts in investors' demand, creating unusually high returns. Gondhalekar and Mehidan (2003) provide support to the blue-Monday hypothesis that Monday seasonality is severe during periods of pessimism among investors on various NASDAQ indices. Specifically, the Monday shortfall in returns (relative to other weekdays) is inversely related to growth in consumer confidence for the case of the composite index and industry sub-indices.

Unlike numerous calendar effect studies based on Western markets, few researchers use Asian markets as samples, especially as they have distinct holiday periods. For instance, in addition to U.S. and European markets, Pecjak (1970) shows significant correlations between positive emotion such as happiness and laughter and holidays including Saturday and Sunday among respondents in Japan, suggesting the universality of verbal synaesthesia. In an empirical test of trading patterns in Taiwan, Wang and Walker (2000) find that individual investors (more easily subject to emotion) can cause lower Monday returns than other days of the week. It appears that the relation between emotion and calendar effects is consistent and valid in both Western and Eastern stock markets.

Given the arguments from the above literature that link the association between positive emotion and higher stock returns during the days before holidays, this study's hypothesis is that, due to Taiwanese investors' positive emotions and optimistic expectations prior to

holidays, expected future cash flow is higher and/or the risk associated with assets is lower. Subsequently, a greater demand for stocks occurs, the purchase of risky assets is enhanced, and thereby prices and returns are bid up before a holiday. In this paper we use empirical analysis to investigate this hypothesis.

### 3. DATA AND METHODOLOGY

To examine this study's prediction, we obtain stock return data from the Taiwan Economic Journal (TEJ) database and use daily returns on the TAIEX, which is a value-weighted capital index of listed securities on the exchange by market capitalization. The index observation period spans from January 1971 to December 2011. For the pre-holiday event in Taiwan, we use New Year (January 1), Chinese New Year (during January or February), Tomb Sweeping Day (April 4 or 5), Dragon Boat Festival (during May or June), Mid-Autumn Festival (during September or October), and National Day (October 10).<sup>1</sup>

The pre-holiday period is defined as the last trading day prior to the beginning of the corresponding holiday. Pre-holiday event days are identifiable from historical calendars offered on the Internet.<sup>2</sup> Non-pre-holiday events are the trading days other than the pre-holiday event days.

To test for the presence of the pre-holiday effect, we estimate the following regression equation:

$$R_t = a + b\text{Pre-holiday} + \varepsilon_t, \quad \dots (1)$$

where

$R_t$  is the daily return on day  $t$  for the TAIEX, Pre-holiday is a dummy variable that equals one on pre-holidays and zero otherwise,  $b$  is a coefficient to be estimated, and  $\varepsilon_t$  is a random variable.

In order to analyse whether the pre-holiday effect is caused by other calendar anomalies and macroeconomic factors, we use the following equation:

$$R_t = a + b\text{Pre-holiday} + c\text{Weekend} + d\text{Turn-of-the-year} + e\text{U.S. returns} + \varepsilon_t, \quad \dots (2)$$

where

Pre-holiday, Weekend, and Turn-of-the-year are dummy variables and assume a value of 1 if the day is

<sup>1</sup> The dates of Chinese New Year, Tomb Sweeping Day, Dragon Boat Festival, and Mid-Autumn Festival change year by year, as they are based on the lunar calendar.

<sup>2</sup> <http://destiny.xfiles.to/app/calendar/CalendarPage>

respectively prior to a holiday, on a weekend, in the last two weeks in December and the first two weeks in January, and zero otherwise. The U.S. returns variable is on the CRSP value-weighted capital index and lagged by one day.

To examine the relationship between investors' emotion and the pre-holiday effect, we estimate the following regression equation:

$$(R_{pre} - R_{non-pre})_t = a + b(\text{Emotion}_{pre} - \text{Emotion}_{non-pre})_t + \varepsilon_t, \dots (3)$$

where

$(R_{pre} - R_{non-pre})_t$  is the difference between the mean return on pre-holidays during a given calendar year and the mean return on non-pre-holidays during that calendar year, and  $(\text{Emotion}_{pre} - \text{Emotion}_{non-pre})_t$  is the difference between the mean proxy for emotion on pre-holidays during a given calendar year and the mean proxy for emotion on non-pre-holidays during that calendar year. We utilize four proxies to capture concurrent emotion among investors during the pre-holidays and non-pre-holidays: turnover, volume, ADL, and returns on small stocks.

#### 4. EMPIRICAL RESULTS

##### 4.1 Pre-holiday effect

Table 1 reports the estimated coefficients and corresponding statistics from the estimation of equation (1). As can be seen from the table, the return for pre-holidays is significantly positive and higher than that on other days. This finding is consistent with prior literature on the pre-holiday effect and adds to it since none of the extant studies analyses the pre-holiday effect on the Taiwan stock market.

We use parametric and non-parametric tests as an alternative to the approach in Table 1 to examine whether the difference in the mean pre-holiday and non-pre-holiday returns is different from zero. Table 2 displays the findings. Consistent with the results in Table 1, the mean pre-holiday return is significantly positive and is significantly higher than the mean non-pre-holiday return.<sup>3</sup> The difference is not only statistically significant, but also economically large.

<sup>3</sup> The mean non-pre-holiday return may be influenced by extreme rare events, such as Black Monday, because the non-pre-holiday sample of 11,096 is much larger than the pre-holiday one of 246. We compute the average return and standard deviation of a random sample for 246 non-pre-holiday days using random sampling with replacement and without replacement. We obtain the average return of -0,01 and -0,20 and a standard deviation of 1,54 and 1,62 from replacement and without replacement, respectively. The average return of a random sample for 246 non-pre-holidays remains much lower than that for pre-holidays. Therefore, the original non-pre-holiday return is not driven by extreme events.

Assuming a 250-day trading year, the mean return on pre-holidays exceeds 190%, as opposed to 11% on non-pre-holidays in geometric annual return.

The TAIEX daily returns (in per cent) are regressed against dummy variables. Dummy variables assume a value of 1 if the day is prior to a holiday and zero otherwise. The Petersen (2009) correction is used for dealing with heteroskedasticity.

$$R_t = a + b\text{Pre-holiday} + \varepsilon_t$$

**Table 1: The pre-holiday effect in the TAIEX, 1971-2011**

Intercept	Pre-holiday	Sample size	R square	F-Stat
0,04 (2,66)***	0,39 (4,17)***	11,342	0,001	17,41***

\*\*\*, \*\*, and \* represent significance at the 1%, 5%, and 10% levels, respectively.

This table compares the average pre-holiday return with the average non-pre-holiday return. The t-statistic under mean return (%) shows whether the mean return is significantly different from zero. The differences of mean tests include parametric and non-parametric tests (t-test and Wilcoxon rank sums test).

**Table 2: Differences in the mean pre-holiday and non-pre-holiday return on the TAIEX, 1971-2011**

Statistics	Pre-holiday	Non-pre-holiday	Parametric (t-statistic)	Wilcoxon (z-stat)
Mean return (%)	0,43	0,04	4,18*	5,06***
t-statistic	(4,68)***	(2,66)***		
Sample size	246	11,096		

\*\*\*, \*\*, and \* represent significance at the 1%, 5%, and 10% levels, respectively.

Figure 1 displays a chronological analysis – a scatter plot of time against average pre-holiday versus non-pre-holiday returns for each year. As we can see, the pre-holiday average return is higher than the non-pre-holiday average return in most of the observation years. During the 1970s, the difference between pre-holiday average return and non-pre-holiday average return is mostly under 0,5%. The gap grows wider during the late 1980s and the early 1990s, reaching 1,31% in 1989, 1,99% in 1991, and 1,29% in 1993. Afterwards, the differential return shrinks a little bit and maintains around over 0,5% starting from 2006.

The questions raised by the findings of Table 2 are whether one holiday is driving all the pre-holiday returns and whether some pre-holiday returns are more significant than others. Table 3 shows an average pre-holiday return per holiday. As the table displays, most of the average pre-holiday returns are much higher than the non-pre-holiday returns. The National Day has the lowest, negative average return. The average return before the Chinese New Year is the highest among all the holidays (with an average

pre-holiday daily return of 0,90%). One could make money by investing in a portfolio (i.e. Exchange Traded Fund) at the start of the last trading day before the Chinese New Year and selling it at the end of that same last trading day or at the beginning of the first trading day after the Chinese New Year. This investment strategy would earn a return of about 839% in geometric annual return.<sup>4</sup>

#### 4.2 Volatilities, calendar anomalies, and macroeconomic factors

Table 4 exhibits the volatilities of pre-holiday returns and non-pre-holiday returns. We see that the standard deviation of pre-holiday daily returns is significantly lower than that for non-pre-holiday returns. Thus, the risk/return trade-off does not explain the high return on pre-holidays.

Table 5 displays the results of a multivariate regression model that regresses the index returns on the pre-holiday effect, weekend effect (French, 1980; Gibbon and Hess, 1981), and turn-of-the-year effect (Meneu and Pardo, 2004), controlling for the previous day's U.S. market returns, which proxy for a world stock index. The pre-holiday dummy equals 1 if the returns occur before holidays; the weekend effect variable equals 1 if the returns occur on Friday; and the turn-of-the-year effect binary equals 1 if the trading day is in the last two weeks in December and in the first two weeks in January, and zero otherwise.

We find that the pre-holiday variable remains statistically significant and positive after adding these control variables to the model. The results confirm that the high pre-holiday returns are not attributable to other calendar anomalies and macroeconomic factors. The findings also verify the validity of other calendar effects and macroeconomic factors in determining the patterns of returns. In other words, all factors contribute significantly in addition to the pre-holiday effect in the Taiwan stock market, which is consistent with the broader body of calendar effect research.

#### 4.3 Emotion

To examine the relationship between the pre-holiday effect and investor emotion, we use four underlying proxies for emotion: market turnover, volume, ADL, and small stock returns.

*Turnover and Volume (Liquidity)* can be used as proxies for emotion. Baker and Stein (2004) and Baker and Wurgler (2006, 2007) suggest that in a market with constraints on short-sales, irrational investors

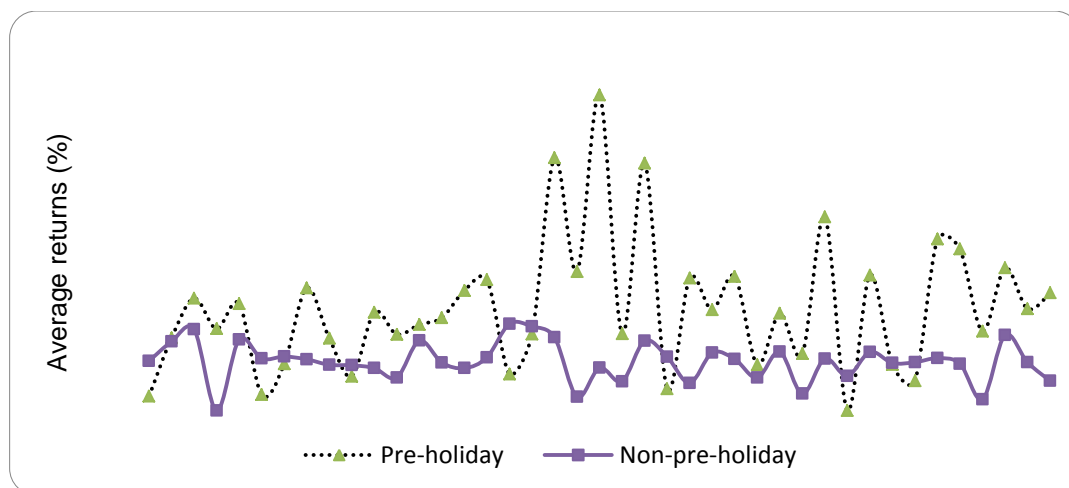
participate and thus add liquidity only when they are optimistic; thus, high liquidity is a symptom of overvaluation. They therefore argue that liquidity serves as a sentiment index. Supporting the argument, Frieder and Subrahmanyam (2004) find that optimism among investors before a festive occasion is reflected in their trading activity. The daily turnover is calculated by dividing the total number of shares traded over a day by the number of shares outstanding for the day and then multiplying it by 100%.

*Advance-Delay Line (ADL)* presents the number of rising or falling individual stocks within a market index in order to measure the extent to which investor emotion is accumulated in the Taiwan stock markets (Hsu, Kuo, Peng, and Chen, 2010). The change in the value-weighted index is significantly influenced by large-firm securities. Sometimes a majority of the shares will decline, yet the index rises. However, a stock market is supposed to reflect a country's whole economic situation. As such, when a large proportion of companies are in a poor condition, the stock market – which represents overall economic prospects – is eventually impacted, but large capitalization stocks are typically the last ones to be impacted in an economic downturn (firms with poor performance are usually eliminated first). Therefore, a stock index may ultimately reveal the overall economic condition (blue-chip shares are typically larger). The ADL, an indicator of the number of rising firms vs. declining firms, accordingly possesses the quality of generality. The larger the ADL is, the greater the number of rising firms is. This represents that investors are more positive and optimistic over the future economic environment. The ADL is defined as the daily number of advancing stocks minus the daily number of declining stocks.

*Small stocks return* is another measure that may capture the emotion of individual investors. Using this variable, Gondhalekar and Mehdiyan (2003) find that Monday seasonality is related to pessimism among investors. In other words, they find that the better the small-stock returns are, the less severe is the Monday shortfall. Wang and Walker (2000) adopt this measure and show that individual investors cause the weekday pattern in the Taiwan market where individual investors account for the majority of the trading volume. Therefore, small-stock returns may not only trace the trading activities of individual investors, but also proxy for optimism among investors. The return on small stocks is computed as the value-weighted return in the two deciles with the lowest market capitalization at the beginning of the calendar year.

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<sup>4</sup> The return of 839% is calculated as  $((1+0,009)^{250}-1)\times 100$ , where 250 represents the number of trading days and the number of times the interest is compounded per year. A long-term investor could realize these returns over the long life of a mutual fund or personal investment.



**Figure 1. Average pre-holiday and non-pre-holiday returns on the TAIEX each year**

This scatter plot shows average pre-holiday return versus average non-pre-holiday return per year for the TAIEX.

This table reports the mean pre-holiday daily return for each of the six holidays. The holidays include New Year (January 1), Chinese New Year (during January or February), Tomb Sweeping Day (April 4 or 5), Dragon Boat Festival (during May or June), Mid-Autumn Festival (during September or October), and National Day (October 10).

**Table 3: Separate mean pre-holiday daily return**

Holiday	Mean pre-holiday TAIEX daily return (%)
New Year	0,82
Chinese New Year	0,90
Tomb Sweeping Day	0,52
Dragon Boat Festival	0,44
Mid-Autumn Festival	0,38
National Day	-0,50
Total pre-holiday return average	0,43

This table compares the standard deviation of TAIEX returns on pre-holidays with the standard deviation of TAIEX returns on non-pre-holidays.

**Table 4: Return volatilities on the TAIEX, 1971-2011**

Statistics	Pre-holiday	Non-pre-holiday	Difference F-test
Standard deviation (%)	1,43	1,60	1,25**
Sample size	246	11,096	

\*\*\*, \*\*, and \* represent significance at the 1%, 5%, and 10% levels, respectively.

Below are the results of regressing the TAIEX value-weighted daily returns against dummy variables. The sample includes the pre-holiday and non-pre-holiday daily returns. The pre-holiday is the last trading day prior to the holidays. Dummy variables assume a value of 1 if the day is respectively prior to a holiday, on a weekend, in the last two weeks in December and the first two weeks in January, and zero otherwise. The U.S. returns are on the CRSP value-weighted capital index and lagged by one day.

$$R_t = a + b\text{Pre-holiday} + c\text{Weekend} + d\text{Turn-of-the-year} + e\text{U.S. returns} + \varepsilon_t$$

**Table 5: The relationship between the pre-holiday effect and other calendar anomalies, 1971-2011**

Intercept	Pre-holiday	Weekend	Turn-of-the-year	U.S. market return	Sample size	R square	F-Stat
0,00 (0,22)***	0,39 (3,96)***	0,09 (2,38)**	0,12 (1,90)*	0,30 (16,13)***	9,805	0,042	72,84***

\*\*\*, \*\*, and \* represent significance at the 1%, 5%, and 10% levels, respectively.

Period swings in the mood among investors about asset returns (such as during the dot.com years) may influence the intensity of the seasonal effect over time (Gondhalekar and Mehdián, 2003). Following this argument, we regress the premium in the pre-holiday return (relative to non-pre-holidays) against four

potential proxies for emotion between pre-holidays and non-pre-holidays among investors. According to the literature stated earlier, we expect the pre-holiday premium to have a positive relationship with these differences in proxies if the pre-holiday emotion is different from the non-pre-holiday one.

Table 6 presents our findings. Model 1 in Table 6 shows that the pre-holiday premium is significantly and positively associated with the difference between pre-holiday turnover and non-pre-holiday turnover at the 5% level. In other words, the higher the difference is between pre-holiday and non-pre-holiday emotion, the stronger is the pre-holiday premium. Model 2 displays that the pre-holiday premium is not significantly related to the difference between pre-holiday volume and non-pre-holiday volume. Model 3 reports that the pre-holiday premium is positively linked to the difference between pre-holiday ADL and non-pre-holiday ADL at a very significant level of 1%. As can be seen from

Model 4 in Table 6, we find that the pre-holiday premium is also very significantly and positively related to the difference between pre-holiday small-stock returns and non-pre-holiday small-stock returns. Though the predictive power of these models is not strong (low R-square numbers), the overall findings in Table 6 support the view that, because these occasions are festive and investors await them in a good mood, the positive emotion could lead to an increase in investor confidence and an increase in traders' willingness to invest in risky assets.

For each of the 41 calendar years during the period 1971-2011, the mean return on pre-holidays is subtracted by the mean return on non-pre-holidays. This difference is regressed against the difference between proxies for emotion among investors on pre-holidays and non-pre-holidays. The emotion proxies include turnover, volume, ADL, and return on small stocks. The sample size for each regression is 41.

$$(R_{pre} - R_{non-pre})_t = a + b(\text{Emotion}_{pre} - \text{Emotion}_{non-pre})_t + \varepsilon_t$$

**Table 6: The relationship between the pre-holiday effect and proxies for concurrent emotion among investors**

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	0,34 (4,58)***	0,38 (4,99)***	0,12 (1,56)	0,26 (3,62)***
Turnover <sub>pre</sub> - Turnover <sub>non-pre</sub>	1,37 (2,40)**			
Volume <sub>pre</sub> - Volume <sub>non-pre</sub>		0,00 (1,16)		
ADL <sub>pre</sub> - ADL <sub>non-pre</sub>			0,01 (5,29)***	
Return on small stocks <sub>pre</sub> - Return on small stocks <sub>non-pre</sub>				0,41 (3,90)***
R square	0,13	0,03	0,42	0,28
F	5,74**	1,33	27,99***	15,20***

\*\*\*, \*\*, and \* represent significance at the 1%, 5%, and 10% levels, respectively

$R_{pre} - R_{non-pre}$	=	The difference between the mean return on pre-holidays during a given calendar year and the mean return on non-pre-holidays during that calendar year (in %).
$\text{Turnover}_{pre} - \text{Turnover}_{non-pre}$	=	The difference between the mean turnover on pre-holidays during a given calendar year and the mean turnover on non-pre-holidays during that calendar year. The daily turnover is calculated as the total number of shares traded over a day divided by number of shares outstanding for that day and multiplying it by 100%.
$\text{Volume}_{pre} - \text{Volume}_{non-pre}$	=	The difference between the mean volume on pre-holidays during a given calendar year and the mean volume on non-pre-holidays during that calendar year.
$\text{ADL}_{pre} - \text{ADL}_{non-pre}$	=	The difference between the mean ADL on pre-holidays during a given calendar year and the mean ADL on non-pre-holidays during that calendar year. The daily ADL is calculated as the number of rising shares minus the number of falling shares.
$\text{Return on small stocks}_{pre} - \text{Return on small stocks}_{non-pre}$	=	The difference between the value-weighted return on small stocks on pre-holidays during a given calendar year and the value-weighted return on small stocks on non-pre-holidays during that calendar year. A small stock is defined as being in the two deciles of the lowest market capitalization at the beginning of the calendar year.

## 5 CONCLUSION

The goal of this study is to test for a behavioural explanation of the pre-holiday effect. We propose the emotion-pre-holiday hypothesis by arguing that investors are inherently more positive and more willing to buy securities on pre-holidays than on other days. Thus, stock returns are higher before holidays. This study formulates and tests this proposition by using available measures for investors' behavioural variables.

We empirically find that the pre-holiday effect does exist for the TAIEX. The high return on pre-holidays is not attributable to risk/return trade-off, other financial calendar anomalies, nor macroeconomic situations. Findings based on proxies for investor emotion (turnover, volume, ADL, and small stock returns) suggest that investors' positive emotion plays a role in the pre-holiday phenomenon in Taiwan.

Our study adds to the literature in the following ways. First, the pre-holiday phenomenon persists over a long period of time (1971 to 2011) in the TAIEX. Second, it contributes to the knowledge on the understanding of non-Western holidays on an Asian market, which is not well documented in the extant literature. More importantly, the findings shed light on the role of investor emotion in the pre-holiday effect, suggesting that positive emotion about upcoming holidays causes individual investors to be optimistic, leading to higher trading and liquidity and the bidding up of stock prices. Consequently, these findings support the view that positive emotion gives rise to the pre-holiday pattern in stock returns.

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