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One Country, Two Calendars: Lunar January Effect in China's A-Share Stock Market

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Abstract

In this paper, we examine the January effect in China's A-share stock market from January 1995 to December 2019 using both the solar and lunar calendars. Consistent with the existing literature, we find the absence of a traditional January effect in the solar calendar; however, we observe a strong January effect in the lunar calendar. Moreover, the effect is much stronger in small firms. We demonstrate that the tax-loss selling and window dressing hypotheses cannot explain the turn-of-the-year effect in China. Instead, the turn-of-the-year effect in trading volume and buy orders help to explain the strong lunar January effect. As a falsification test, we examine the B-share market that is predominantly composed of foreign investors and find no evidence of the lunar January effect. Our results show that Chinese financial markets are more closely aligned with the traditional lunar calendar than the standard solar calendar.

Keywords January effect; Chinese lunar calendar; China's A-share market; Turn-of-the-year effect

JEL Classification: G11, G14, G15, G40

1. Introduction

Calendar anomalies and, in particular, monthly calendar effects in stock markets have been widely studied in the literature. Rozeff and Kinney (1976) show that a composite index of NYSE securities has significantly higher returns in January compared with other months. Subsequent researchers, such as Gultekin and

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Gultekin (1983), Barone (1990), and Agrawal and Tandon (1994), have also shown that abnormally positive returns in January are prevalent in both developed and emerging markets worldwide. However, evidence in the Chinese stock market does not support the existence of a January effect (Mitchell and Ong 2006; Zhang *et al.* 2008; Su *et al.* 2011) but instead supports a February effect (Gao and Kling 2005) or in some cases a March effect (Zhang *et al.* 2008). All of the above studies rely on the Gregorian or solar calendar. In this paper, we reexamine the monthly calendar effects in Chinese financial markets by using both the solar and lunar calendars. Our results show that Chinese stock markets have a closer alignment with the lunar calendar than the solar calendar.

Pope Gregory XIII introduced the solar, or Gregorian, calendar in 1582 to record the dates of everyday life. As a religion-based calendar, it marks important religious festivals in Western countries. For example, Western countries and other regions affected by Christian culture celebrate Christmas on December 25 every year. Moreover, January 1 marks the New Year in most countries. However, the solar calendar is not the only popular calendar around the world. For example, the lunar calendar dates back at least 2000 years and is widely used by China and other countries that are influenced by Chinese traditional culture. Although these two calendars both define a year as the earth's complete cycle around the sun, the ways in which they define months are different: rather than artificially defining the length of a month, the lunar calendar uses the exact cycle of the moon; it usually starts with the new moon and ends at the next new moon. In this paper, to distinguish between these two calendars, we call the months in the solar calendar solar months and those in the lunar calendar lunar months. For example, we call January in the solar calendar solar January while we call the first month in the lunar calendar lunar January ("正月" in Chinese), and so forth.

Nowadays, China uses both the solar and lunar calendars. While relying on the solar calendar in everyday life, China has deep cultural roots in the lunar calendar. Chinese people record official dates in the solar calendar only, but the Chinese lunar calendar governs traditional holidays.

Figure 1 shows a typical calendar image that can be found in any calendar book people buy in China. It displays the solar and lunar calendars simultaneously. The image shows the day as January 25, 2020 in the solar calendar. For the lunar calendar, it shows "正月初一" or January 1. There is a lag between solar and lunar months, and the length of the lag is about a month and a half. In particular, the Chinese New Year always comes later than the Western New Year; it falls strictly within the period between January 21 and February 20 in the solar calendar.

Since the efficient market hypothesis was first proposed, studies have found several calendar anomalies that refute it. Calendar anomalies refer to periods with abnormal returns. Among them, the January effect, which is the focus of this paper,

Figure 1 A Typical Calendar Image Available in China

This figure shows a typical calendar image in China that displays the Western solar calendar and the Chinese lunar calendar. The figure is sourced from www.baidu.com.

indicates that returns in January are significantly higher than in other months.[1] Because January marks the turn of the year, this effect is sometimes called the turn-of-the-year effect or the New Year effect. Previous studies have documented a strong January effect in many stock markets. However, it does not exist in the Chinese stock market, one of the largest financial markets in the world. In this paper, we revisit this issue and add new evidence to the literature.

We first reexamine the solar monthly effects on the Chinese stock market using both the equal- and value-weighted market index returns from January 1995 to December 2019. We confirm the February and March effects, instead of the solar January effect in this extended sample, consistent with findings in previous literature. Next, we construct lunar monthly returns based on daily returns and examine the lunar monthly effects in the Chinese stock market. We document a strong lunar January effect, with returns much higher than those in solar January. We also confirm the January size effect, that is, the smaller the firm size, the higher the returns in lunar January. Our results indicate that the stock markets in China and developed countries have characteristics in common: not only do they have the January effect, but they show a strong size effect in January. However, while the solar January effect appears in developed counties, it manifests as the lunar January effect in China.

Zhang *et al.* (2008) claim that political power stimulates the solar March effect in China. Following them, we examine how the lunar January effect interacts with the macroeconomic environment in China. We demonstrate that macroeconomic events, such as the two important annual conferences, the National People's

[1]The January effect belongs to the monthly effects. Our study is different from those of Dichev and Janes (2003), Yuan *et al.* (2006), and Keef and Khaled (2011), who examine lunar cycle effects within each month on stock returns in the US and international markets. They find that stock returns are substantially higher on days around a new moon than on days around a full moon. In contrast, we document significantly higher returns in lunar January than in other months.

Congress and the Chinese People's Political Consultative Conference, or *LIANGHUI* (hereafter), have a positive impact on stock market performance. The lunar January effect is much stronger when these events commence in lunar January.

We further examine the relation between risk and return in the Chinese stock market, using the GARCH (1, 1) model as in French *et al.* (1987) and Bali (2008). There is a positive but insignificant relation between the market return and its volatility over time. However, this relation is highly significant in lunar January.

To understand the sources of the lunar January effect, we investigate the investment cycle in the stock market around the Chinese New Year. We show that daily trading volumes diminish substantially in lunar December (before the Chinese New Year) but rise significantly in lunar January (after the Chinese New Year). Correspondingly, the daily returns increase substantially during the turn-of-the-year period and are highly significant in lunar January. Meanwhile, consumer sentiment is significantly higher at the turn of the year. These findings can be attributed to the increasing consumption demand before the Chinese New Year because people pay more for consumption to celebrate the Spring Festival and therefore have to cut down on their investments in the stock market. They reinvest in the stock market after the lunar New Year, which results in higher returns in lunar January, especially for small-sized firms. This pattern is consistent with Ritter (1988), who finds a buy-and-sell cycle at the turn of the New Year that explains the solar January effect in the US stock market.

Doran *et al.* (2012) indicate that this New Year effect is driven by individual investors who prefer lottery-type stocks (low price, high idiosyncratic volatility, and high idiosyncratic skewness). Following them, we conduct a similar pooled cross-sectional regression at the firm level with our extended sample from January 1995 to December 2019. However, our results indicate that firm size is more important than stock price and idiosyncratic volatility in explaining stock returns in lunar January. Additionally, none of the tax-loss selling or window dressing hypotheses can explain the lunar January effect in the Chinese A-share stock market.

The January effect is deeply rooted in Chinese traditional culture, and it occurs in lunar January rather than solar January because the lunar calendar is an integral part of Chinese people's life. As a falsification test, we also examine the January effect in China's B-share market. The B-share market is limited to foreign investment for domestically listed stocks until February 19, 2001, when the exchange of B shares was also permitted for domestic investors in foreign currencies. In contrast to the A-share market, we do not find a lunar or solar January effect in the B-share market before February 2001. Since then, we do find significant lunar January and solar February effects. However, the lunar January effect in the B-share is significantly weaker than that in the A-share market. Our robustness tests indicate that a strong lunar January effect exists in the A-share market in different subperiods, different subsamples, and all of the 28 industries, except for the banking industry.

Gao and Kling (2005) argue that because of the lagging characteristic of the lunar calendar, the solar February effect is the Chinese New Year effect. While

treating the February effect as the Chinese New Year effect is plausible, it is not an accurate depiction of the data. The date of the Chinese New Year falls between January 21 and February 20. Over the last 200 years, there have been 70 years in which the Chinese New Year was in the last 10 days of solar January while the rest were in solar February. As the duration of a lunar month has a mean period of 29 days, lunar January could span from late January to middle March in the solar calendar. In addition, McGuinness and Harris (2011) show that the Chinese New Year effect is concentrated in four trading days: three days prior to and one day after the Chinese New Year. Using the same window, Yuan and Gupta (2014) confirm the Chinese New Year effect in major Asian stock markets including those of China, Hong Kong, Japan, Malaysia, South Korea, and Taiwan. Bergsma and Jiang (2016) show that 11 stock markets (including China) outperform in the (−4, +4) trading day window surrounding their cultural New Year, and they define a cultural New Year month if the majority of trading days in the window falls in that particular month in a given year. While the first and the last four days in this window occur in lunar December and lunar January respectively, they may also appear in different solar months. For example, in the first seven years of our sample, there are four years (1995, 1997, 1998, and 2001) with the (−4, 0) window in solar January and the (0, 4) window in solar February. In contrast, the four trading days before and after the Chinese New Year are in solar February and solar March, respectively in the other three years (1996, 1999, and 2000). Therefore, none of these previous studies have examined the lunar January effect as documented in our paper.

By mapping the solar calendar to the lunar calendar and constructing lunar monthly returns, we are able to directly test lunar monthly effects in the Chinese A-share market. We demonstrate that there is a strong January effect in the Chinese stock market. However, unlike developed markets the effect exists in lunar January rather than in solar January. The lunar January effect is stronger for small capitalization stocks. It also has a significant impact on the relation between return and volatility in the Chinese stock market. In addition, we also investigate the sources of the lunar January effect and document significant trading volume and daily return changes around the turn of the Chinese New Year.

The lunar calendar is an important part of the lives of Chinese domestic investors but has been ignored in previous research on the Chinese stock market. Our research contributes to the existing literature with new evidence obtained using lunar monthly returns, and we emphasize the important role of traditional culture toward a deeper understanding of the stock market in China for both academicians and practitioners.

The rest of the paper is organized as follows. In Section 2, we describe the data sources. Section 3 presents evidence on the lunar January effect in the A-share Chinese stock market and its impact on the role of macroeconomic events and stock market volatility. We examine the turn-of-the-year effect in trading volume and daily return changes and compare the difference in the A- and B-share markets in Section 4. Section 5 provides some robustness checks while Section 6 concludes the findings of the study.

2. Data

The stock market in mainland China includes two major submarkets: the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Both exchanges were established in 1990 and they adopt similar trading rules. To support small enterprises, the Shenzhen Stock Exchange launched the Small and Medium Board in 2004 and the Growth Enterprise Market in 2009. The stock market outside the Small and Medium Board and the Growth Enterprise Market is usually called the Main Board.

There are two major types of stocks listed in the Chinese stock market: A share and B share. A shares are denominated in Renminbi (RMB) and are open mostly to domestic investors, while B shares are denominated in foreign currencies (usually in US and Hong Kong dollars). Before February 19, 2001, the B-share market was limited to foreign investors. Since then, the exchange of B shares has also been open to domestic investors. Due to various programs that have relaxed cross-trading restrictions, issuance and trading activities have decreased sharply in recent years. In the following, most of our empirical analyses focus on A shares since almost the entire market is traded in A shares (Hu *et al.* 2019, 2021).

Our study relies on daily trading data for both equal- and value-weighted indices as well as individual stocks that we extracted from the China Stock Market and Accounting Research (CSMAR) database. The indices capture the A-share market in the Shanghai Stock Exchange (SHSE), the Shenzhen Stock Exchange (SZSE), and the whole market containing both the SHSE and the SZSE (Whole Market). These data allow us to construct size-sorted portfolios and industry portfolios in the following investigations.

The daily transaction data come from the solar calendar. Using the official website of the Hong Kong Observatory, we map the recorded solar calendar date to the lunar calendar. Therefore, each solar daily observation connects to a concrete lunar date. Based on daily returns, we construct monthly returns for individual stocks in lunar months or solar months based on the buy-and-hold approach using the following formula:

$$r_t = (1 + r_1)(1 + r_2) \ldots (1 + r_n) - 1, \tag{1}$$

in which n is decided by the number of trading days within month t. We then calculate the monthly returns of portfolios based on different weighting schemes.

Our sample period starts in solar January 1995 when the number of listed stocks exceeded 300 (Hu *et al.* 2019), and ends in solar December 2019. Accordingly, the sample lunar period starts with lunar December 1994, of which the first day is exactly solar January 1, 1995, and ends in lunar November 2019. Leap months are

included in their previous months so that one year is composed of 12 lunar months.[2] Hence, there are a total of 300 solar months and 300 lunar months in our sample, respectively.

3. Lunar January Effect

This section presents the evidence for the lunar January effect on China's A-share stock market. In particular, we examine whether there is a January effect using both solar and lunar calendars, and the relation between January and size effects. We also investigate how macroeconomic events and volatility affect market returns in January.

3.1. Solar Monthly Effect

We first test the existence of solar monthly effects. Panel A of Table 1 represents the returns on six market indices including the Whole Market, the SHSE, and the SZSE in 12 solar months. We do not find any significance for the solar January effect in the Whole Market or the two stock exchanges, but the solar February and March effects are prevalent for all six indices. The average February return ranges from a low of 2.836% to a high of 5.745%, while the average March return is between 3.452% and 5.400%. The returns are larger for the equally weighted indices, which indicates a size effect that will be explored later. In contrast, none of the returns is significant in the other 10 months, except for the value-weighted SHSE index. It is significant at the 10% level in solar April.

Panel B further compares the average monthly return differences in February/March and the other 10 solar months. Excluding February and March, the average monthly returns range from 0.743% to 1.029% for the six indices in the remaining 10 months. These average returns are not significantly different from zero. The returns in February or March are much larger than in the other 10 months. Especially for the three equal-weighted indices, their returns are all significantly larger. If we combine solar February and March, their equal-weighted (value-weighted) average returns are at least 4.527% (2.401%) larger than the corresponding ones in the other 10 months. The equal-weighted returns are significantly larger in these two months.

Consistent with previous literature (Gao and Kling 2005; Mitchell and Ong 2006; Zhang *et al.* 2008; Su *et al.* 2011), our findings from the extended sample indicate that there is no solar January effect, but strong solar February and March effects in the A-share stock market in China.

[2]In the Chinese lunar calendar, there are leap months (i.e., "闰月" in Chinese) once every three years to balance the cycle of the year. The name of a leap month is the same as that of the previous lunar month. In our study, leap months are combined with their previous months. For example, leap lunar July is included in lunar July. Therefore, there are 12 lunar months every year, as in the solar calendar.

Table 1 Solar Monthly Effect

This table presents the test results for the solar monthly effect. Tests are performed in six market indices including the whole A-share market (Whole Market), the Shanghai Stock Exchange (SHSE), and the Shenzhen Stock Exchange (SZSE). Three of the indices are equal-weighted (EW) in the three markets while the others are value-weighted (VW). To calculate the market indices, we firstly aggregate daily returns of individual stocks into solar months using the buy-and-hold approach, that is $r_t = (1 + r_1)(1 + r_2) \ldots (1 + r_n) - 1$ in which r_t is the solar monthly return, and $r_1, r_2, \ldots, r_n$ represent the daily returns within month t. The VW market indices are based on market capitalization at the end of the previous solar month. Daily trading data are gathered from CSMAR. Panel A presents mean returns in every solar month. Panel B compares the returns in solar February and solar March with returns in the other 10 months. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from solar January 1995 to solar December 2019, a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Whole Market		SHSE		SZSE	
Market Indices	EW	VW	EW	VW	EW	VW
Panel A: Mean Returns in Solar Months						
Solar JAN	0.732 (0.343)	0.871 (0.448)	0.864 (0.412)	0.949 (0.496)	0.588 (0.270)	0.731 (0.359)
Solar FEB	5.631 (4.004)***	3.308 (3.089)***	5.458 (4.024)***	2.836 (2.806)***	5.745 (3.921)***	4.550 (3.545)***
Solar MAR	5.307 (2.469)**	3.602 (1.977)*	5.096 (2.414)**	3.452 (1.889)*	5.400 (2.471)**	3.961 (2.056)*
Solar APR	2.612 (1.125)	3.319 (1.534)	2.856 (1.287)	3.434 (1.736)*	2.468 (0.966)	3.130 (1.211)
Solar MAY	3.157 (1.493)	1.609 (1.029)	2.740 (1.306)	1.354 (0.808)	3.337 (1.584)	2.397 (1.401)
Solar JUN	−1.093 (−0.464)	0.048 (0.020)	−1.447 (−0.618)	0.226 (0.095)	−0.818 (−0.342)	−0.353 (−0.144)
Solar JUL	1.641 (0.870)	1.382 (0.808)	1.467 (0.827)	1.285 (0.811)	2.070 (0.875)	1.631 (0.768)
Solar AUG	−0.473 (−0.268)	−1.557 (−0.967)	−0.393 (−0.227)	−1.613 (−1.019)	−0.573 (−0.314)	−1.288 (−0.745)
Solar SEP	0.177 (0.144)	−0.103 (−0.099)	0.190 (0.159)	0.057 (0.054)	0.081 (0.064)	−0.329 (−0.293)
Solar OCT	0.684 (0.321)	0.821 (0.438)	−0.216 (−0.120)	0.164 (0.102)	1.782 (0.671)	1.574 (0.672)
Solar NOV	2.257 (1.486)	1.001 (0.733)	1.978 (1.388)	0.771 (0.582)	2.503 (1.519)	1.471 (0.944)
Solar DEC	−0.854 (−0.477)	0.225 (0.131)	−0.535 (−0.314)	0.804 (0.460)	−1.150 (−0.590)	−0.620 (−0.347)
Panel B: Return Differences between Solar FEB/MAR and Other Months						
Other 10 months	0.884 (1.441)	0.761 (1.368)	0.750 (1.278)	0.743 (1.379)	1.029 (1.537)	0.834 (1.337)
Solar FEB – Other 10 months	4.747 (2.384)**	2.547 (1.420)	4.708 (2.468)**	2.093 (1.206)	4.716 (2.174)**	3.716 (1.843)*
Solar MAR – Other 10 months	4.423 (2.153)**	2.840 (1.534)	4.346 (2.203)**	2.709 (1.505)	4.371 (1.963)*	3.127 (1.514)
(Solar FEB + Solar MAR)/2 – Other 10 months	4.585 (2.313)**	2.694 (1.502)	4.527 (2.383)**	2.401 (1.381)	4.543 (2.104)**	3.421 (1.703)*

3.2. Lunar Monthly Effect

We next take a more detailed look at whether there are monthly effects in China based on the lunar calendar.

Panel A of Table 2 reports the returns on the same six market indices in 12 lunar months. We document an extremely strong lunar January effect in the A-share market as the returns are all significant at the 1% level for all six indices. Their returns range from 4.008% to 8.022%, all larger than the corresponding returns in solar February and solar March. In the meantime, we also find a weak lunar February effect. Although the returns are all smaller than in lunar January, they are all significant at the 10% level in lunar February. In contrast, none of the returns for the six indices is significant in the other 10 lunar months.

Panel B of Table 2 indicates that the returns in lunar January are significantly higher than those in other lunar months. The lunar January effect is established and is prevalent in both the equal-weighted and value-weighted market indices.

We also compare the difference between the solar January and lunar January returns, and the results are reported in Panel C of Table 2. The positive and large difference means that the returns in lunar January are much stronger than those in solar January, especially for the equal-weighted indices as they are all statistically significant. These results confirm that in the Chinese stock market, the January effect is absent from the solar calendar. Instead, it appears in the Chinese lunar calendar. This finding is more consistent with the actual life of the Chinese people since they place more emphasis on the Chinese New Year than the solar New Year.

Combining Tables 1 and 2, we also find that the lunar January effect is much stronger than the solar February and March effects. In fact, the returns in solar February are between 70.76% and 80.57% of those in lunar January, while they are between 67.31% and 86.13% in solar March. As it could span from late January to middle March in the solar calendar, lunar January overlaps with solar February and/or solar March. However, they do not match the lunar January completely because of the asynchronization between the Chinese lunar calendar and the Western solar calendar. Therefore, it is not accurate to equate the solar February effect documented in the literature with the lunar January effect.[3]

3.3. Size Effect

In examining the monthly effects, we find that the equal-weighted returns are often larger than the corresponding value-weighted ones for all the market indices examined. For instance, in Panel A of Table 1, the average return on the equal-weighted Whole Market index surpasses that on the value-weighted index (5.631% compared

[3]Our results are robust when we winsorize the extreme 1% or 5% daily returns of individual stocks in our sample. We also run regressions with monthly market returns on their returns in 12 months using both the solar and lunar calendars. The higher R^2 for all the market indices indicates that the lunar calendar dominates the solar one in explaining Chinese financial market returns. These results are available upon request.

Table 2 Lunar Monthly Effect

This table presents the test results for the lunar monthly effect. Tests are performed in the six market indices as in Table 1. The returns of each market index are calculated by using a similar approach to Table 1, based on the lunar calendar. Panel A presents mean returns in every lunar month. Panel B compares the returns in lunar January with the other 11 months. Panel C provides the *t*-test of the return difference between lunar January and solar January. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 to lunar November 2019, a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Whole Market		SHSE		SZSE	
Market Indices	EW	VW	EW	VW	EW	VW
Panel A: Mean Returns in Lunar Months						
Lunar JAN	7.791 (4.780)***	4.463 (3.399)***	7.518 (4.777)***	4.008 (3.169)***	8.022 (4.711)***	5.647 (3.675)***
Lunar FEB	4.040 (1.900)*	3.279 (1.725)*	4.102 (1.931)*	3.257 (1.714)*	3.933 (1.843)*	3.431 (1.719)*
Lunar MAR	0.868 (0.429)	1.406 (0.740)	0.656 (0.351)	1.173 (0.694)	1.087 (0.476)	1.837 (0.768)
Lunar APR	3.903 (1.659)	2.844 (1.371)	3.818 (1.568)	2.914 (1.363)	3.794 (1.672)	3.044 (1.436)
Lunar MAY	−2.859 (−1.164)	−1.491 (−0.648)	−3.600 (−1.477)	−1.607 (−0.735)	−1.962 (−0.737)	−1.479 (−0.569)
Lunar JUN	2.717 (1.474)	1.539 (1.001)	2.988 (1.649)	1.551 (1.051)	2.500 (1.296)	1.777 (1.015)
Lunar JUL	1.267 (0.613)	−0.138 (−0.087)	1.336 (0.660)	−0.139 (−0.092)	1.163 (0.550)	0.019 (0.011)
Lunar AUG	−0.318 (−0.212)	−0.281 (−0.200)	−0.492 (−0.358)	−0.332 (−0.247)	−0.120 (−0.072)	−0.303 (−0.198)
Lunar SEP	0.076 (0.038)	0.570 (0.322)	−0.486 (−0.266)	0.164 (0.099)	0.771 (0.346)	0.918 (0.448)
Lunar OCT	2.074 (1.045)	1.586 (0.803)	2.155 (1.082)	1.850 (0.870)	1.984 (0.980)	1.282 (0.705)
Lunar NOV	−0.830 (−0.383)	−1.037 (−0.554)	−0.957 (−0.460)	−0.908 (−0.506)	−0.782 (−0.344)	−1.009 (−0.492)
Lunar DEC	1.475 (0.800)	1.946 (1.213)	1.655 (0.907)	1.935 (1.208)	1.269 (0.670)	1.868 (1.102)
Panel B: Return Difference between Lunar JAN and Other Lunar Months						
Other 11 Months	1.128 (1.827)*	0.929 (1.694)*	1.016 (1.673)*	0.896 (1.671)*	1.240 (1.923)*	1.035 (1.722)*
Lunar JAN - Other 11 Months	6.663 (3.161)***	3.533 (1.896)*	6.502 (3.140)***	3.112 (1.709)*	6.783 (3.083)***	4.612 (2.252)**
Panel C: Return Difference between Lunar JAN and Solar JAN						
Lunar JAN-Solar JAN	7.060 (2.630)**	3.592 (1.531)	6.654 (2.538)**	3.059 (1.334)	7.434 (2.686)***	4.915 (1.927)*

to 3.308%) in solar February. A similar situation exists for the lunar January effect (e.g., 7.791% compared to 4.463%). The difference comes from the different methodologies used to calculate the portfolio returns. Since the equal-weighted method assigns equal weights to each stock, it allocates heavier weights to small firms relative to the value-weighted method. As the component stocks in these portfolios are the same, the higher returns of the equal-weighted indices show that small firms have higher returns than large firms, that is, the size effect.

The size effect is found along with the solar January effect in many markets. Keim (1983) and Roll (1983) find that small firms have higher returns than larger US firms in solar January. Fama and French (1993) confirm that the extra stock returns in solar January decrease as firm size increases when controlling for the book-to-market ratio. Tax-loss selling can partially explain the firm size effect (Reinganum 1983).

To examine the size effect in the A-share market, we construct five size-sorted portfolios. Following Hu *et al.* (2021), we utilize stocks listed in the Main Board of the A-share market to construct the breakpoints, in order to avoid that stocks listed on the Small and Medium Enterprise Board and the Growth Enterprise Market dominate the smaller quintiles. The portfolios are rebalanced at the end of lunar May every year. We first aggregate daily returns of individual stocks into lunar months following equation (1), and then calculate the lunar monthly returns of the portfolios according to their weighting schemes.

Panel A in Table 3 shows that as the size grows, the equal-weighted portfolio returns in lunar January decrease from 9.395% to 4.662%. All of them are significant at the 1% level. We also find that their returns in lunar January are all significantly higher than the corresponding ones in the other 11 months (at the 1% level), except for the largest size portfolio, which is significant at the 5% level. The return difference gets smaller in magnitude as the size of the portfolio becomes larger. The last column represents the return difference between the smallest and largest size portfolios, which is highly significant at the 1% level in lunar January and significant at the 10% level in the other 11 months. Panel B confirms that a similar pattern holds qualitatively for the value-weighted size-sorted quintiles. The evidence here shows that the size effect manifests in lunar January in the A-share Chinese stock market, similar to the solar January effect documented in Western stock markets.

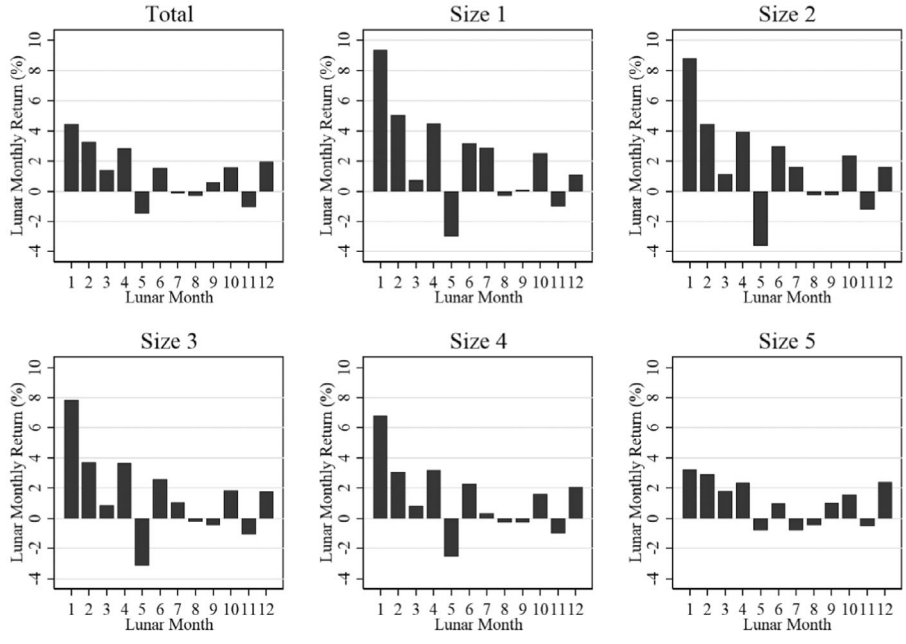
Figure 2 plots the above results for the value-weighted average lunar monthly returns of the whole A-share market and the five size-sorted portfolios. The lunar January effect is clear: on the one hand, the average market return is higher in lunar January than in other months; on the other hand, for the five size-sorted portfolios, returns in lunar January are extraordinarily higher than those in other months, except for the largest size portfolio. In addition, the difference between returns in lunar January and other lunar months drops monotonically from the smallest size portfolio to the largest size portfolio.

Table 3 Size Effect

This table presents lunar monthly returns for size-sorted quintile portfolios. We utilize stocks listed in the Main Board of the A-share market to construct the break-points. The portfolios are rebalanced at the end of lunar May every year. To calculate the monthly returns, we firstly aggregate daily returns of individual stocks into lunar months using the buy-and-hold approach and then calculate the lunar monthly portfolio returns according to their weighting schemes. Panels A and B present mean returns of equal-weighted and value-weighted size quintiles, respectively. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 to lunar November 2019, a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Size Quintiles	Small	2	3	4	Big	Small-Big
Panel A: Equal-Weighted Returns						
Lunar JAN	9.395 (5.244)***	8.869 (5.044)***	7.888 (4.578)***	6.864 (4.197)***	4.662 (3.310)***	4.733 (4.727)***
Other 11 Months	1.501 (2.288)**	1.164 (1.791)*	0.981 (1.577)	0.848 (1.400)	0.870 (1.538)	0.631 (1.854)*
Lunar JAN - Other 11 Months	7.894 (3.519)***	7.705 (3.468)***	6.907 (3.244)***	6.016 (2.907)***	3.792 (1.970)**	4.102 (3.507)***
Panel B: Value-Weighted Returns						
Lunar JAN	9.363 (5.264)***	8.818 (5.017)***	7.841 (4.553)***	6.812 (4.179)***	3.242 (2.627)**	6.121 (5.093)***
Other 11 Months	1.430 (2.195)**	1.164 (1.792)*	0.971 (1.563)	0.845 (1.398)	0.956 (1.773)*	0.474 (1.124)
Lunar JAN - Other 11 Months	7.933 (3.560)***	7.654 (3.447)***	6.869 (3.230)***	5.966 (2.888)***	2.286 (1.250)	5.647 (3.905)***

Figure 2 Average Lunar Monthly Returns



This figure shows the average returns in lunar months in the sample. The upper left is the value-weighted lunar monthly return of the total A-share market, as shown in Table 2. The others are the value-weighted returns on the five size-sorted quintile portfolios from the smallest to the largest, as in Panel B of Table 3.

3.4. Lunar January Effect and Macroeconomic Events

We use two important political conferences, the Chinese People's Political Consultative Conference (CPPCC) and the National People's Congress (NPC), to represent important macroeconomic events that occur in Beijing starting on (solar) March 3 and March 5 each year, respectively. *LIANGHUI*, or in English, Two Sessions, is a term commonly used to refer to these annual plenary sessions that last approximately two weeks. During this period, the central government's efforts in the previous year are summarized and the goals for the rest of the year are set. Zhang *et al.* (2008) claim that the Chinese government has an incentive to maintain a thriving stock market to keep investors optimistic, thus maintaining social stability during the *LIANGHUI* period. This leads to a higher monthly return in solar March, as shown in Panel A of Table 1. However, when one moves to the lunar calendar, *LIANGHUI* commences in either lunar January or February. Therefore, we investigate the impact of *LIANGHUI* on the lunar January effect in the years when *LIANGHUI* starts in lunar January and lunar February, respectively, in the following model:

$$R_L(t) = \alpha + \beta LJAN_t + e(t), \tag{2}$$

in which *LJAN* is a dummy equal to one in lunar January and zero in other months.

Panel A of Table 4 shows that *LIANGHUI* has a significantly positive effect on all three equal-weighted market returns. The coefficients are also positive and large in magnitude, but insignificant for the three value-weighted market indices. This indicates that *LIANGHUI* has a stronger impact on small firms.

Panels B and C of Table 4 provide the results of equation (2) when *LIANGHUI* starts in lunar January and lunar February, respectively. Out of the full sample of 25 years, there are 15 and 10 years when *LIANGHUI* begins in lunar January and February, respectively.[4] Clearly, the magnitude and significance of the coefficient estimates in Panel B indicate that *LIANGHUI* has a very strong impact on the lunar January effect, no matter whether we consider the equal- or value-weighted market indices. They are all significant at the 1% level. In contrast, if *LIANGHUI* starts in lunar February, almost none of the coefficients is significant at conventional levels.

To sum up, *LIANGHUI* plays an important role in stock performance in the Chinese A-share market. Its impact is much stronger when *LIANGHUI* commences in lunar January.

3.5. Lunar January Effect and Risk–Return Relation

French *et al.* (1987) examine the relation between US stock market returns and volatility. Using GARCH-in-mean models, they document a significantly positive relation between market risk premium and predictable volatility of stock market returns. Bali (2008) generalizes this approach for a large cross-section of industry and size/book-to-market portfolios using US data and shows that the significant positive relation also holds between a portfolio's expected return and its conditional covariance with the market. Following their approach, we investigate whether there is a positive tradeoff between risk and volatility in the Chinese A-share market, and the impact of lunar January on this relation. For this purpose, we estimate the following GARCH (1, 1) model:

[4]When the Chinese New Year is in solar February, *LIANGHUI* always starts in lunar January, except for year 2003, in which New Year began on February 1. In contrast, in all the nine years when Chinese New Year was in solar January, *LIANGHUI* always started in lunar February. Since the conference duration is between nine and 16 days, the majority of *LIANGHUI* concluded in lunar February even if it started in lunar January. Altogether, there are 35 months in which *LIANGHUI* was held.

Table 4 Macroeconomic Events

This table presents the impact of macroeconomic events on the lunar January effect. We use the two most important political conferences: the National People's Congress (NPC) and the Chinese People's Political Consultative Conference (CPPCC) to represent important macroeconomic events. A dummy *LIANGHUI* equals one in the lunar months during which the two conferences are held, and zero otherwise. Panel A tests the role of *LIANGHUI*:

$$R_L(t) = \alpha + \beta LIANGHUI_t + e(t),$$

while Panels B and C examine the impact of *LIANGHUI* on the lunar January effect in the years during which *LIANGHUI* commences in lunar January and lunar February, respectively by using the following model:

$$R_L(t) = \alpha + \beta LJAN_t + e(t),$$

in which the dependent variable is the lunar monthly return of each market index, *LJAN* is a dummy equal to one in lunar January and zero in the other months. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 to lunar November 2019, a total of 300 months in Panel A. The sample size is 179 and 121 in Panels B and C, respectively. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Whole Market		SHSE		SZSE	
Market Indices	EW	VW	EW	VW	EW	VW
Panel A: $R_L(t) = \alpha + \beta LIANGHUI_t + e(t)$						
α	1.266 (2.006)**	0.997 (1.787)*	1.124 (1.814)*	0.933 (1.715)*	1.416 (2.145)**	1.163 (1.893)*
β	3.690 (2.136)**	2.002 (1.397)	3.828 (2.264)**	1.966 (1.389)	3.432 (1.935)*	2.266 (1.427)
R^2	0.013	0.005	0.015	0.005	0.010	0.005
Panel B: $R_L(t) = \alpha + \beta LJAN_t + e(t)$ *in Years When LIANGHUI Commences in Lunar January*						
α	1.251 (1.400)	0.828 (1.056)	0.918 (1.060)	0.604 (0.811)	1.617 (1.703)*	1.214 (1.368)
β	8.124 (4.018)***	4.803 (2.693)***	8.248 (4.308)***	4.683 (2.688)***	7.842 (3.619)***	5.468 (2.663)***
Panel C: $R_L(t) = \alpha + \beta LJAN_t + e(t)$ *in Years When LIANGHUI Commences in Lunar February*						
α	0.948 (1.203)	1.080 (1.494)	1.160 (1.443)	1.327 (1.761)*	0.682 (0.880)	0.771 (1.073)
β	4.468 (1.539)	1.631 (0.751)	3.884 (1.363)	0.762 (0.377)	5.185 (1.736)*	3.323 (1.278)

$$R_L(t) = \alpha_0 + \alpha_1 R_L(t-1) + u_t, u_t \tilde{N}\left(0, \sigma_t^2\right), \tag{3}$$

$$\sigma_t^2 = \beta_0 + \beta_1 u_{t-1}^2 + \beta_2 \sigma_{t-1}^2. \tag{4}$$

After we estimate the conditional volatility of the market returns (σ_t^2), we examine the relation between market return and volatility from the regression:

$$R_L(t) = \gamma_0 + \gamma_1 \sigma_t^2 + \gamma_2 LJAN_t \times \sigma_t^2 + e(t), \tag{5}$$

in which *LJAN* is a dummy variable that is equal to one in lunar January and zero otherwise.

Panel A of Table 5 shows that market volatility has a positive effect on market return for all six market indices examined, without *LJAN* in equation (5). However, unlike the US stock market, these coefficients are small in magnitude, and none is significant.

Panel B of Table 5 provides the estimates when *LJAN* is included in equation (5). Of the six market indices, the coefficients of five are significantly positive in lunar January, except for the value-weighted market return on SZSE. Among them, the significance levels for the three equal-weighted market indices are all 5% or above. Our results indicate that there is a much stronger positive relation between stock return and volatility in the A-share stock market in lunar January.

4. Sources of Lunar January Effect

In this section, we explore the potential sources of the lunar January effect in the Chinese A-share stock market. In particular, we study whether the two major hypotheses for the January effect in the US market, tax-loss selling and window dressing, can be used to explain the lunar January effect. We examine the turn-of-the-year effect on daily trading activities before and after the Chinese New Year and show that they are associated with higher returns in lunar January.[5] We also investigate monthly effects in the B-share market to understand why the lunar January effect exists in the A-share market.

4.1. Tax-Loss Selling and Window Dressing

There is considerable evidence of a January effect in the US stock market since Rozeff and Kinney (1976). Tax-loss selling and window dressing are two popular explanations for this effect. The tax-loss selling hypothesis posits that individual

[5]In contrast to previous literature that studies the Chinese New Year effect with window (−3, +1) or (−4, +4), our approach examines the market before and after the Chinese New Year to investigate the turn-of-the-year effect.

Table 5 Risk and Return

This table examines the relationship between risk and return in the Chinese A-share market. Risk (σ_t^2) is measured by the conditional variance estimated from the following GARCH model:

$$\begin{aligned} R_L(t) &= \alpha_0 + \alpha_1 R_L(t-1) + u_t, \;\; u_t \tilde{N}\left(0, \sigma_t^2\right), \\ \sigma_t^2 &= \beta_0 + \beta_1 u_{t-1}^2 + \beta_2 \sigma_{t-1}^2, \end{aligned}$$

in which the dependent variable in the mean equation is lunar monthly returns. Panel A provides the estimates from:

$$R_L(t) = \gamma_0 + \gamma_1 \sigma_t^2 + e(t).$$

Panel B estimates the model:

$$R_L(t) = \gamma_0 + \gamma_1 \sigma_t^2 + \gamma_2 LJAN_t \times \sigma_t^2 + e(t),$$

in which *LJAN* is a dummy that represents lunar January. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 to lunar November 2019, a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Whole Market		SHSE		SZSE	
Market Indices	EW	VW	EW	VW	EW	VW
Panel A: $R_L(t) = \gamma_0 + \gamma_1 \sigma_t^2 + e(t)$						
γ_0	1.071 (0.950)	0.416 (0.566)	1.137 (1.113)	0.657 (0.959)	0.560 (0.465)	−0.123 (−0.139)
γ_1	0.006 (0.492)	0.009 (0.993)	0.004 (0.377)	0.006 (0.675)	0.011 (0.922)	0.015 (1.582)
R^2	0.002	0.006	0.001	0.003	0.008	0.016
Panel B: $R_L(t) = \gamma_0 + \gamma_1 \sigma_t^2 + \gamma_2 LJAN_t \times \sigma_t^2 + e(t)$						
γ_0	0.980 (0.880)	0.442 (0.599)	1.014 (1.011)	0.676 (0.995)	0.495 (0.412)	−0.159 (−0.179)
γ_1	0.003 (0.268)	0.007 (0.737)	0.002 (0.152)	0.004 (0.421)	0.009 (0.707)	0.014 (1.381)
γ_2	0.043 (3.073)***	0.020 (1.668)*	0.045 (3.465)***	0.021 (1.671)*	0.036 (2.171)**	0.022 (1.482)
R^2	0.023	0.011	0.025	0.009	0.024	0.021

investors sell losing stocks before the year-end to lower their tax liability by using the realized losses to offset capital gains, while the window-dressing hypothesis assumes that institutional investors buy (sell) stocks that have increased (decreased) in value before the year-end to present attractive year-end portfolio holdings to their clients when they are evaluated at the year-end.

One difficulty in distinguishing these two hypotheses is that they both predict largely the same pattern in stock returns around the year-end: while selling pressure that depresses prices is intensified at the year-end for loser stocks, prices rebound in January, resulting in large January returns. Sias and Starks (1997) examine differences between stocks dominated by individual investors versus those dominated by institutional investors. Their results are more consistent with the tax-loss selling hypothesis and indicate that the trading of individual investors is primarily responsible for the turn-of-the-year effect. Poterba and Weisbenner (2001) also support the tax-loss selling hypothesis by studying changes in the capital gains tax rules facing individual investors. D'Mello *et al.* (2003) use intraday data to classify each trade as either a buy or a sell and provide direct evidence consistent with the tax-loss selling hypothesis. They argue that tax-loss selling, rather than firm size or share price, is the fundamental explanation for the January effect in the US stock market. Using closing bid and ask quotes from the NYSE's Trade and Quote (TAQ) database, Chen and Singal (2004) confirm that tax-loss selling, rather than window dressing or other explanations, is the most important cause of the January effect.

Using ownership data from the China Research Data Services Platform (CNRDS), we examine whether tax-loss selling or window dressing can explain the lunar January effect in the Chinese A-share stock market. Similar to Sias and Starks (1997), we classify stocks into two groups according to their institutional holdings at the beginning of a lunar year: one group with the percentage of institutional holdings less than the median of all firms versus another with the percentage of institutional holdings above the median. The former group is dominated by individual investors, while the latter is owned by relatively more institutional investors. We follow Chen and Singal (2004) to construct the measure for a stock's potential to sell at the end of each lunar year. However, our results indicate that none of the tax-loss selling and window dressing hypotheses can explain the lunar January effect.[6]

There are two reasons for the failure of tax-loss selling and window dressing to explain the lunar January effect in the Chinese A-share market. On the one hand, there is no such tax as capital gains tax in China, though stock market investors do

[6]We sort stocks into quintiles according to their potential to sell. However, there is no significant difference between quintiles 5 and 1 in terms of their returns during the turn of the year for both the full sample and the two subgroups. Our results indicate that there is no intensified selling pressure for stocks with the largest potential to sell during the last trading days in lunar December. These results are not reported here for the sake of brevity, but are available upon request.

pay taxes, including dividend income tax and stock transaction tax (Hu *et al.* 2021). Since investors do not pay tax on their capital gains, they do not have any incentive to sell the losing stocks from their portfolios to lower their net capital gains at either solar year-end or lunar year-end. On the other hand, fund managers disclose their holdings at year-end. However, a fiscal year or a tax year in China is typically a solar year, starting on solar January 1 and ending on solar December 31. Therefore, a fiscal year is not concurrent with a lunar year, and fund managers have no incentive to window dress at the lunar year-end. Moreover, the Chinese A-share stock market is dominated by retail investors, and trading of institutional investors accounts for less than 20% of the trading volume in the market (Hu *et al.* 2021). Thus, the window dressing of institutional investors is less likely to explain the lunar January effect.

4.2. Turn-of-the-Year Effect Across Size-Sorted Portfolios

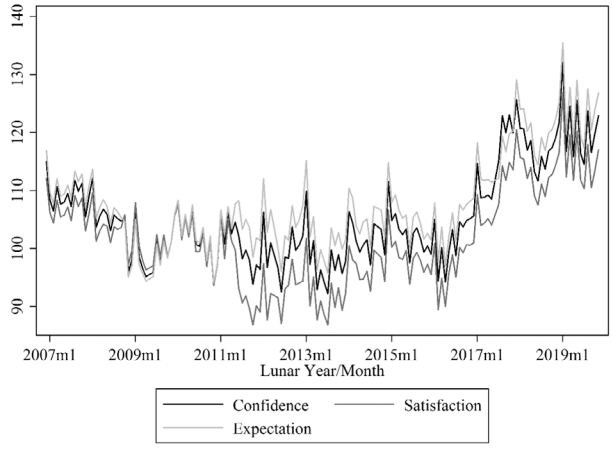
Ritter (1988) demonstrates that the January effect is the result of a seasonal trading pattern associated with the turn of the year in the US stock market. Sias and Starks (1997) show that the effect is stronger on stocks dominated by individual investors. The trading activities around the Chinese New Year could also be directly related to the lunar January effect. Data from 2014 to 2019 show that the seven-day consumption *per capita* during the Chinese New Year accounts for 40–43% of the previous year's monthly disposable income per capita each year.[7] These activities demand cash, and people are in need of cash at that time. Therefore, investors may have to draw money from their accounts before the Chinese New Year, and then reinvest the residuals into the stock market after the holidays. This pattern is further boosted by the cash bonus that employees are rewarded before the lunar new year under Chinese tradition, as shown in Chen and Chien (2011) and Bergsma and Jiang (2015).

Consistent with this hypothesis, we observe that consumer sentiment is significantly higher at the turn of the year. Figure 3 provides the time series of consumer confidence index, consumer satisfaction index, and consumer expectation index from lunar December 2006 to lunar November 2019.[8] Unreported tests show that consumer sentiment is often at its highest level in lunar December or lunar January, and their averages in these two months are significantly higher than in other months (at the 5% level) for all three indices.

[7]This proportion is estimated from consumption data from the Ministry of Commerce of People's Republic of China and the previous year's disposable income per capita from the National Bureau of Statistics of China. The latter data have been available since 2014.

[8]The data are obtained from the National Bureau of Statistics of China. They start from January 2007 and are recorded monthly. We first calculate the daily average of each index in a solar calendar month, then add up the daily values within a lunar month to construct the lunar monthly index (leap months are excluded).

Figure 3 The Time Series of Consumer Sentiment Index



This figure shows the monthly levels of three indices: the consumer confidence index, the consumer satisfaction index, and the consumer expectation index in each lunar month. They are constructed from the monthly levels of these indices in solar months starting from January 2007. Data are from the National Bureau of Statistics of China.

Table 6 examines the relation between consumer sentiment and the lunar January effect more formally. We construct five size-sorted portfolios in the A-share market as in Section 3, and run the following regression:

$$R_L(t) = \gamma_0 + \gamma_1 Sentiment_t + \gamma_2 LJAN_t \times Sentiment_t + e(t), \tag{6}$$

The results indicate that there is a much stronger relation between stock returns and the consumer sentiment indices in lunar January, as γ_2 is positive and statistically significant at the 1% level for all size quintiles, except for the largest one.[9]

We focus on trading activities near the Chinese New Year to further explore the turn-of-the-year effect. In particular, we examine the daily trading volume, buy proportion, and returns in lunar December and the next lunar January to understand the changes before and after the Chinese New Year.[10] The daily trading volume of each size quintile is value-weighted and standardized by year. First, we investigate

[9]For the sake of brevity, we only include results for the five value-weighted size quintiles in Table 6. We run the same regressions for the five equal-weighted size quintiles and our results are qualitatively similar. They are available upon request.

[10]We also examine the daily trading volume, buy proportion, and return changes between the last 10 trading days in lunar December and the first 10 trading days in lunar January. The stock market is closed for at least one week between these two periods for Chinese New Year. Our results are qualitatively similar and they are available upon request.

Table 6 Consumer Sentiment

This table examines the relationship between consumer sentiment and stock returns in the Chinese A-share market. We run the following regression:

$$R_L(t) = \gamma_0 + \gamma_1 Sentiment_t + \gamma_2 LJAN_t \times Sentiment_t + e(t),$$

where *Sentiment* is represented by the levels of consumer confidence index, consumer satisfaction index, and consumer expectation index in each lunar month in Panels A, B, and C, respectively, $R_L(t)$ represents the lunar monthly returns of the five value-weighted size quintile portfolios as in Table 3, and *LJAN* is a dummy that represents lunar January. The sample spans from lunar December 2006 to lunar November 2019, with leap months excluded. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Size Quintiles	Small	2	3	4	Big
Panel A: Consumer Confidence Index					
γ_0	15.326 (1.290)	12.993 (1.105)	10.053 (0.891)	6.669 (0.612)	−3.989 (−0.463)
γ_1	−0.132 (−1.173)	−0.115 (−1.033)	−0.091 (−0.851)	−0.060 (−0.585)	0.042 (0.513)
γ_2	0.097 (3.237)***	0.099 (3.345)***	0.093 (3.278)***	0.080 (2.903)***	0.024 (1.102)
Panel B: Consumer Satisfaction Index					
γ_0	10.213 (0.879)	7.546 (0.657)	5.179 (0.470)	2.828 (0.266)	−5.085 (−0.606)
γ_1	−0.087 (−0.758)	−0.066 (−0.582)	−0.047 (−0.429)	−0.025 (−0.237)	0.054 (0.656)
γ_2	0.099 (3.162)***	0.101 (3.265)***	0.095 (3.208)***	0.081 (2.851)***	0.025 (1.089)
Panel C: Consumer Expectation Index					
γ_0	17.553 (1.459)	15.603 (1.310)	12.478 (1.091)	8.749 (0.792)	−2.593 (−0.297)
γ_1	−0.150 (−1.343)	−0.137 (−1.239)	−0.112 (−1.053)	−0.079 (−0.765)	0.028 (0.345)
γ_2	0.096 (3.270)***	0.098 (3.383)***	0.092 (3.310)***	0.079 (2.928)***	0.024 (1.118)

the turn-of-the-year effect in terms of the daily trading volume, and we estimate the following model:

$$Volume(t) = \alpha + \beta_1 LDEC_t + \beta_2 LJAN_t + e(t), \tag{7}$$

in which the dependent variable is the daily trading volume of each portfolio, and *LJAN* and *LDEC* are dummies that represent lunar January and lunar December, respectively.

The estimates of equation (7) are presented in Panel A of Table 7. The constant indicates the average daily trading volume from lunar February to lunar November, while the other two coefficients represent the differences between the daily trading volume in lunar December/January and the other 10 months, respectively. As Panel A in Table 7 shows, the daily trading volumes in lunar December drop for most size quintiles, except for the largest one. In contrast, the daily trading volumes increase in lunar January for all portfolios. The increases are so strong that all of them are significant at the 1% level. Panel A also provides the difference in trading volume between lunar December and lunar January. The *F*-tests show that there are significant increases in volume for most portfolios before and after the Chinese New Year; they are significant at the 1% level, except for the largest size quintile.

Starting from solar January 2003 (lunar December 2002), the CSMAR database classifies each transaction as a buy or sell order following the approach in Lee and Ready (1991). We then construct the buy proportion of a stock in a day from dividing the volume of buy transactions by the volume of total trades (buys + sells) of this stock on the same day, as in Hu *et al.* (2014).[11] We calculate the value-weighted daily buy proportion for each portfolio and run the following regression:

$$Buy\ Proportion\ (t) = \alpha + \beta_1 LDEC_t + \beta_2 LJAN_t + e(t), \tag{8}$$

The estimates of equation (8) are presented in Panel B. The coefficient of *LDEC* shows that compared with the prior 10 months, there are increases in the proportion of buy orders for all size quintiles in lunar December, except for the smallest size quintile. However, the increase is only significant for the largest size quintile (at the 5% level). In contrast, the increases in the buy proportion are much larger for most of the size quintiles in lunar January. They monotonically decrease: all are significant at the 1% level, except for the insignificant increase of the largest size quintile. The coefficient changes also decrease from the smallest to the largest size quintile monotonically, which indicates that the buy proportion increases the most

[11]We also calculate the buy proportion from the number of orders and the yuan volume of transactions, and obtain qualitatively similar results. These results are unreported to save space, but are available upon request.

Table 7 Turn of the Chinese New Year

This table presents our examination of the turn-of-the-year effect in daily trading volume, daily buy proportion, and daily return. We construct five size-sorted value-weighted quintiles. We utilize stocks listed in the Main Board of the A-share market to construct the breakpoints. The portfolios are rebalanced at the end of lunar May every year. The daily volume is standardized by year. We calculate the daily buy proportion out of the volume of total trades following Hu *et al.* (2014). Panels A, B, and C give the empirical results of the following models, respectively:

$$\begin{aligned} Volume(\mathrm{t}) &= \alpha + \beta_1 LDEC_{\mathrm{t}} + \beta_2 LJAN_{\mathrm{t}} + \mathrm{e}(\mathrm{t}), Buy\ Proportion(\mathrm{t}) \\ &= \alpha + \beta_1 LDEC_{\mathrm{t}} + \beta_2 LJAN_{\mathrm{t}} + \mathrm{e}(\mathrm{t}), \mathrm{R}(\mathrm{t}) = \alpha + \beta_1 LDEC_{\mathrm{t}} + \beta_2 LJAN_{\mathrm{t}} + \mathrm{e}(\mathrm{t}), \end{aligned}$$

in which the dependent variable is the daily trading volume, daily buy proportion, or daily return (in percentage) in each portfolio; *LJAN* and *LDEC* are dummies that represent lunar January and lunar December, respectively. The sample period of Panels A and C is from lunar December 1994 to lunar November 2019, a total of 6068 daily observations, while the sample period of Panel B is from lunar December 2002 to lunar November 2019, a total of 4122 daily observations. *t*-statistics based on robust standard errors are in parentheses. *F*-statistics on the test of whether β_1 equals β_2 and the corresponding *p*-values are also reported. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Size Quintiles	Small	2	3	4	Big
Panel A: Daily Trading Volume					
α	−0.012 (−0.877)	−0.007 (−0.488)	−0.008 (−0.609)	−0.013 (−0.992)	−0.035 (−2.678)***
β_1	−0.128 (−2.484)**	−0.159 (−3.086)***	−0.151 (−2.948)***	−0.107 (−2.072)**	0.213 (3.549)***
β_2	0.296 (5.193)***	0.258 (4.673)***	0.275 (4.887)***	0.299 (5.113)***	0.255 (4.202)***
$\beta_2-\beta_1$	0.424***	0.417***	0.427***	0.406***	0.042
F-statistic	32.420	32.617	33.477	28.807	0.253
p-value	0.000	0.000	0.000	0.000	0.615
Adjusted R^2	0.007	0.006	0.006	0.006	0.006
Panel B: Daily Buy Proportion					
α	0.448 (546.333)***	0.454 (597.813)***	0.460 (633.523)***	0.464 (685.417)***	0.480 (764.178)***
β_1	−0.000 (−0.021)	0.002 (0.857)	0.002 (0.976)	0.001 (0.388)	0.004 (2.116)**
β_2	0.016 (6.432)***	0.013 (5.056)***	0.012 (4.708)***	0.007 (2.872)***	0.002 (0.947)

Table 7 (*Continued*)

Size Quintiles	Small	2	3	4	Big
$\beta_2-\beta_1$	0.016***	0.010***	0.009***	0.006*	−0.001
F-statistic	19.424	9.056	7.902	3.614	0.214
p-value	0.000	0.003	0.005	0.057	0.643
Adjusted R^2	0.006	0.005	0.004	0.001	0.001
Panel C: Daily Returns (in percentage)					
α	0.064 (2.302)**	0.048 (1.709)*	0.038 (1.377)	0.031 (1.131)	0.034 (1.428)
β_1	−0.007 (−0.077)	0.036 (0.374)	0.058 (0.594)	0.076 (0.800)	0.090 (1.072)
β_2	0.510 (4.844)***	0.495 (4.674)***	0.446 (4.276)***	0.393 (3.814)***	0.174 (1.823)*
$\beta_2-\beta_1$	0.518***	0.458***	0.388***	0.317**	0.084
F-statistic	14.249	10.976	8.013	5.557	0.469
p-value	0.000	0.001	0.005	0.018	0.493
Adjusted R^2	0.004	0.003	0.003	0.002	0.000

for the smallest size quintile between these two lunar months. All these changes are significant at the 1% level, except for the two largest size quintiles.

We further investigate the impact of these changes in the proportion of buy orders on stock returns. The model we use is similar to equation (7), except that the dependent variable is the daily returns of each portfolio:

$$R(t) = \alpha + \beta_1 LDEC_t + \beta_2 LJAN_t + e(t), \tag{9}$$

The results in Panel C indicate that during lunar December, almost all of the daily portfolio returns are higher than the averages in the 10 months from lunar February to November, except for the smallest size quintile. But none of them is significantly different from the average. After the Chinese New Year, stock prices increase substantially in lunar January. In particular, the daily returns of the three small size quintiles are all significantly higher at the 1% level, consistent with their significant increase in the proportion of buy orders. More importantly, Panel C shows that the returns increase significantly from lunar December to lunar January, except for the largest size quintile. The return increases the most for the smallest size quintile and becomes gradually smaller, which is consistent with the size effect in Table 3.

Table 7 demonstrates that the trading cycle does exist near the Chinese New Year: the daily trading volume drops before the Chinese New Year but rises a great deal after that. The increase in the daily trading volume and the buy proportion of all orders are accompanied by an increase in the daily return, especially for small-sized stocks. The trading demands of investors accumulate during the Chinese New Year, and thus the trading volume and buy orders explode right after the holiday, which leads to higher returns in lunar January. These results are consistent with the turn-of-the-year effect documented by Ritter (1988).

Doran *et al.* (2012) indicate that the turn-of-the-year effect is driven by individual investors who demonstrate a gambling preference for lottery-type stocks, such as those with low price and high idiosyncratic volatility in the Chinese New Year month. Using account-level data, Jones *et al.* (2021) examine retail investor trading behavior in the Chinese stock market. They find that retail investors with smaller account sizes display overconfidence and a gambling preference, while larger retail investors are more rational. Following Doran *et al.* (2012), we conduct a similar pooled cross-sectional regression at the firm level.[12] The dependent variable is the monthly individual stock return minus the equal-weighted A-share market return, while the independent variables are the log of stock price and idiosyncratic volatility in the previous month. Idiosyncratic volatility is measured as the standard deviation of daily residuals from the market model. In addition, we also include firm size to

[12]Instead of using lunar January, Doran *et al.* (2012) define the Chinese New Year month as a 22-trading-day window beginning from the first trading day of the Chinese New Year and their sample is from January 1994 to December 2006. On average, there are only 15.72 trading days in lunar January.

investigate whether the lottery characteristics of stocks can explain the strong size effect in lunar January.

The regression results are reported in Table 8. We find that both the stock price and idiosyncratic volatility are significant at the 10% level in lunar January when they are bundled together in the regression. Their signs indicate stocks with low price and high idiosyncratic volatility have higher returns in lunar January. However, when we include firm size in the regression models, stock price is no longer significant. Idiosyncratic volatility is also insignificant in lunar January. Among all the cases, firm size is negatively significant at the 5% or 1% level. Our results indicate that firm size is more important than stock price and idiosyncratic volatility in explaining stock returns in lunar January.

4.3. The Monthly Effect in the B-Share Market

In an early study, Mitchell and Ong (2006) show that only the A-share stock market has the Chinese New Year effect, while it does not occur in the B-share market because it is primarily composed of foreign investors. As domestic investors only invest in A-shares, the lunar January effect in that market is related to their trading activities around the Chinese New Year. In this market, many investors are followers of traditional Chinese culture. But foreign investors do not follow the lunar calendar, and their trading activities in the Chinese B-share market do not show a lunar January effect.

Previous studies of Chinese stock markets often have very limited samples. Since February 19, 2001, the exchange of B shares has been permitted to domestic investors in foreign currencies. With our extended sample ending in December 2019, we further examine whether the January effect exists in China's B-share market and the difference between these two markets.

We consider the returns on both equal- and value-weighted market indices of the SHSE and the SZSE in January, February, and March according to both the solar and lunar calendars. The results are shown in Table 9. Panel A indicates that during the full sample period from January 1995 to December 2019, there is no solar January, but a February effect in the B-share stock market. The lunar January effect is weak in the B-share market: the two equal-weighted market returns are significantly positive at the 10% level, but the two value-weighted market returns are insignificant. None of the market returns is significant in lunar February and March.

Panels B and C further examine the monthly effects in the B-share market before and after February 19, 2001. When the market is predominantly composed of foreign investors, there is no evidence of lunar January or February effects as none of the market returns is significant. Similarly, we did not find monthly effects in solar months. However, all the market returns, whether equal- or value-weighted, are significant at the 5% level in solar February when the B-share market is also accessible to domestic investors. The returns on the two equal-weighted market indices are also significant at the 5% level in lunar January.

Panel D compares the return difference between the A- and B-share markets in the full sample. Though the stocks are essentially the same, market returns in the

Table 8 Pooled Cross-Sectional Regression

This table examines gambling preference in Doran *et al.* (2012). The dependent variable is the individual stock returns minus the equal-weighted market return in each lunar month. The independent variables include: *LOGPRC*, the logarithm of the closing price at the end of the previous lunar month; idiosyncratic volatility (*IVOL*), the standard deviation of daily residual returns in the preceding lunar month from the regression of daily returns on the A-share market index; *SIZE*, the logarithm of the market value of outstanding shares at the end of the previous lunar month. We also include the interactions between those variables and *LJAN*, which is the dummy variable representing lunar January. Returns are expressed as percentages. Time fixed effect is controlled in every model. In parentheses are *t*-statistics based on standard errors clustered on firm and time. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LOGPRC	−0.234 (−1.101)		−0.229 (−1.079)		−0.070 (−0.315)		−0.063 (−0.282)
LOGPRC × *LJAN*	−0.911 (−1.525)		−0.989 (−1.656)*		−0.546 (−0.803)		−0.640 (−0.933)
IVOL		−0.014 (−1.549)	−0.013 (−1.551)			−0.016 (−1.701)*	−0.015 (−1.791)*
IVOL × *LJAN*		0.298 (1.702)*	0.329 (1.752)*			0.250 (1.483)	0.274 (1.545)
SIZE				−0.414 (−3.230)***	−0.399 (−2.874)***	−0.416 (−3.250)***	−0.402 (−2.904)***
SIZE × *LJAN*				−0.974 (−3.241)***	−0.854 (−2.391)**	−0.932 (−3.143)***	−0.788 (−2.219)**
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.007	0.006	0.007	0.009	0.009	0.009	0.009
Observations	531 735	531 735	531 735	531 735	531 735	531 735	531 735

Table 9 Monthly Effect in the B-Share Market

This table presents the test results of the solar and lunar monthly effects in the B-share stock market. We calculate the monthly returns in the B-share market as in the A-share market. The first four columns present the average returns in solar January, February, and March, while the last four columns provide the average returns in lunar January, February, and March. Panel A presents the mean returns in the whole sample period. For the solar calendar, the sample starts in January 1995 and ends in December 2019, and for the lunar calendar, the sample starts in December 1994 and ends in November 2019. Panels B and C present the mean market returns in two subperiods, before and after domestic investors can invest in B shares. The breakpoint is February 2001 in the solar calendar, and correspondingly January 2001 in the lunar calendar. Panel D compares the return difference in the A- and B-share stock markets in January, February, and March of both calendars. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 (solar January 1995) to lunar November 2019 (solar December 2019), a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Solar Calendar				Lunar Calendar			
Solar/lunar	SHSE	SHSE	SZSE	SZSE	SHSE	SHSE	SZSE	SZSE
Months	EW	VW	EW	VW	EW	VW	EW	VW
Panel A: Whole Sample Period								
JAN	1.186 (0.265)	0.722 (0.491)	1.165 (0.491)	1.156 (0.549)	3.072 (1.923)*	2.061 (1.314)	2.541 (1.828)*	1.586 (1.177)
FEB	3.948 (2.419)**	3.245 (2.511)**	3.247 (2.511)**	2.194 (1.742)*	5.419 (1.589)	5.505 (1.702)	9.856 (1.508)	9.111 (1.460)
MAR	4.624 (1.235)	3.951 (1.294)	7.735 (1.294)	7.150 (1.289)	3.082 (0.784)	3.820 (1.053)	1.241 (0.415)	0.935 (0.431)
Panel B: Before February 19, 2001								
JAN	−4.322 (−1.232)	−4.827 (−0.901)	−2.562 (−0.901)	−2.365 (−0.778)	2.054 (0.482)	1.651 (0.398)	−0.170 (−0.062)	−0.707 (−0.253)
FEB	4.719 (1.186)	4.594 (0.412)	1.061 (0.412)	0.280 (0.098)	6.830 (1.694)	6.024 (1.268)	9.525 (1.564)	6.970 (1.199)
MAR	4.583 (0.913)	2.827 (1.770)	5.928 (1.770)	2.937 (1.141)	1.235 (0.271)	3.252 (0.490)	−1.338 (−0.285)	−1.791 (−0.417)
Panel C: After February 19, 2001								
JAN	3.329 (0.848)	2.880 (0.850)	2.614 (0.850)	2.526 (0.951)	3.468 (2.203)**	2.221 (1.418)	3.595 (2.257)**	2.477 (1.625)
FEB	3.648 (2.290)**	2.720 (2.753)**	4.098 (2.753)**	2.938 (2.146)**	4.973 (1.143)	5.341 (1.321)	9.961 (1.176)	9.787 (1.211)
MAR	4.637 (1.042)	4.306 (1.058)	8.306 (1.058)	8.481 (1.165)	3.665 (0.729)	4.000 (0.912)	2.055 (0.557)	1.796 (0.706)
Panel D: Return Difference between the A- and B-Share Markets								
JAN	−0.322 (−0.090)	0.227 (0.068)	−0.576 (−0.179)	−0.425 (−0.145)	4.446 (1.982)*	1.947 (0.966)	5.481 (2.494)**	4.061 (1.987)*
FEB	1.511 (0.752)	−0.409 (−0.243)	2.497 (1.278)	2.356 (1.310)	−1.317 (−0.328)	−2.248 (−0.599)	−5.924 (−0.861)	−5.680 (−0.867)
MAR	0.472 (0.119)	−0.499 (−0.136)	−2.336 (−0.367)	−3.189 (−0.543)	−2.425 (−0.557)	−2.647 (−0.661)	−0.153 (−0.041)	0.903 (0.280)

A-share market are much higher than those in the B-share market in lunar January as three of the four market returns are significantly higher. The numbers are all negative in lunar February, which suggests that market returns in the A-share market are lower than in the B-share market. However, none of the return differences is significant.

The above results show that the lunar January effect is particular to China's A-share stock market due to domestic investors. Outside of China's special traditional culture and holiday arrangements, the lunar January effect may not exist in other markets.[13]

5. Robustness Checks

We have shown that the lunar January effect is very strong in the A-share stock market during our full sample period from lunar December 1994 to lunar November 2019. In this section, we investigate whether the lunar January effect exists in some subsamples. First, we examine the lunar January effect in different samples depending on whether the Chinese New Year is celebrated in solar January or February. Second, we divide the whole sample period into two subperiods to study how the lunar January effect varies over time. Third, we check whether the lunar January effect exists in a relatively constant sample that is composed of firms in 90% of the whole sample period or only in the sample of newly listed firms. Finally, we investigate how the lunar January effect performs in different industries.

5.1. Solar January or February

As mentioned before, the Chinese New Year sometimes occurs in solar January and may also occur in February in certain years. In our full sample, there are nine years during which the Chinese New Year occurred in solar January and 16 years when it occurred in solar February. Does the timing of the Chinese New Year have an impact on the stock market's performance? To examine this question, we split the full sample into two subsamples depending on whether the Chinese New Year occurs in solar January or not. We then calculate the average returns of market indices in lunar January of these two subsamples. The results are presented in Table 10.

Panels A and B present the results for the years during which the Chinese New Year occurred in solar January or in solar February, respectively. The results in Panel A show that the returns on all of the market indices are positive and large in magnitude. However, none of the returns in lunar January is significant, except for the equal-weighted return on the Shenzhen Composite Index, which is significant at

[13]We examine the performance of market indices in the US stock market for the same sample period (January 1995 to December 2019). The results show that the lunar January effect does not exist in the US stock market.

Table 10 Robustness Check: Subsamples and Subperiods

This table presents the results of robustness checks. The whole sample is divided into two subsamples according to whether the Chinese New Year occurs in solar January or solar February. The whole sample period is also divided into two subperiods, before and after the 2008 global financial crisis. The first subperiod ends in lunar September 2007, and the second subperiod starts in lunar October 2007. Panel A provides the results for the subsample when the Chinese New Year occurs in solar January, while Panel B provides the results for the subsample when the Chinese New Year occurs in solar February. Panel C shows the results before the 2008 global financial crisis, while Panel D shows the results after the 2008 global financial crisis. We calculate the returns in lunar January on the same market indices as those in Table 2. In Panel E, we compare the returns in lunar January and other months for two sample compositions: the constant sample is composed of firms that exist in 90% of the sample period, while the non-constant sample includes the remaining firms. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 to lunar November 2019, a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	Whole Market		SHSE		SZSE	
Market Indices	EW	VW	EW	VW	EW	VW
Panel A: Returns in Lunar January When Chinese New Year Occurs in Solar January						
Lunar JAN	5.854 (1.813)	2.904 (1.218)	5.433 (1.716)	2.219 (1.013)	6.367 (1.915)*	4.433 (1.531)
Panel B: Returns in Lunar January When Chinese New Year Occurs in Solar February						
Lunar JAN	8.881 (4.894)***	5.339 (3.403)***	8.691 (5.078)***	5.015 (3.256)***	8.953 (4.610)***	6.329 (3.483)***
Panel C: Returns in Lunar January Before the 2008 Global Financial Crisis						
Lunar JAN	5.801 (2.876)**	3.838 (2.274)**	5.775 (2.869)**	3.776 (2.152)*	5.923 (2.802)**	4.150 (2.384)**
Panel D: Returns in Lunar January Since the 2008 Global Financial Crisis						
Lunar JAN	9.948 (3.915)***	5.139 (2.453)**	9.406 (3.890)***	4.260 (2.238)**	10.297 (3.894)***	7.268 (2.810)**
Market Indices	Whole Market		Constant Sample		Non-constant Sample	
	EW	VW	EW	VW	EW	VW
Panel E: Returns in Different Sample Compositions						
Lunar JAN	7.791 (4.780)***	4.463 (3.399)***	8.104 (4.764)***	5.685 (3.824)***	7.364 (4.688)***	3.828 (3.091)***
Other 11 months	1.128 (1.827)*	0.929 (1.694)*	0.977 (1.569)	0.845 (1.444)	1.201 (1.943)*	0.980 (1.822)*
Lunar JAN - Other 11 months	6.663 (3.161)***	3.533 (1.896)*	7.127 (3.935)***	4.841 (3.030)***	6.164 (3.651)***	2.848 (2.109)**

the 10% level.[14] In contrast, the returns are much higher in lunar January and significant at the 1% level for all of the six market indices in Panel B.

Our results indicate that the lunar January effect is stronger if the Chinese New Year is in solar February. This is not a coincidence. When the Chinese New Year occurs in solar February, *LIANGHUI* is more likely to commence in lunar January, thus amplifying the lunar January effect, as documented in Table 4.

5.2. Subperiods

It is important to investigate the evolution of calendar anomalies because once the public knows the anomalies, they utilize such information to make profits. In practice, many calendar anomalies have disappeared after they were disclosed, which is consistent with the efficient market hypothesis. Chong *et al.* (2005), for example, corroborate that the pre-holiday effect has declined or reversed in many stock markets. Malkiel (2003) criticizes that the January effect is not dependable from period to period in the US market. The calendar anomalies can also be altered by economic events—Holden *et al.* (2005) find that the 1997 Asian financial crisis changed the performance of calendar effects in Thailand's stock market. In Panels C and D of Table 10, we examine how the lunar January effect evolves in the Chinese A-share stock market before and after the 2008 global financial crisis.

We split the full sample into two subperiods based on the starting time of the financial crisis. In 2007, a stock market bubble happened in China as many speculative traders rushed into the market. The stock market became very volatile. As shown in Figure 4, after reaching an all-time high of 6124 points on October 16, 2007, the benchmark Shanghai Composite Index ended down a record 65% within one year. This was mainly due to the impact of the global financial crisis in 2008. Since then, the market has never been to very close to its peak of 2007. Therefore, we use October 2007 (lunar September 2007) as the breakpoint of the two periods.[15]

Panels C and D in Table 10 present the results before and after the financial crisis. For the period before the financial crisis, the returns on all of the market indices are significantly positive at the 5% or 10% levels. Since the financial crisis, the corresponding returns are even higher in lunar January. They are all significant at the 1% or 5% levels for all of the six market indices. In general, the lunar January effect is strong in both subperiods. In contrast to declining calendar anomalies in many markets, we find that the lunar January effect is stronger in the A-share market in the more recent sampling period.

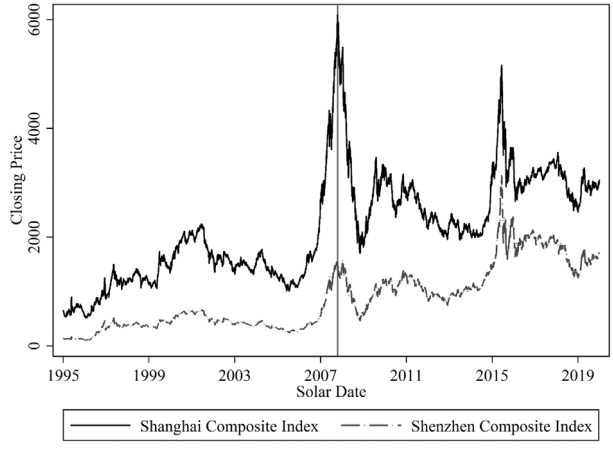
5.3. Subsamples

We show a strong lunar January effect within the whole A-share market from lunar December 1994 to lunar November 2019. The sample period has witnessed a

[14]The insignificance is also related to the small sample size (only nine years).

[15]Lu *et al.* (2016) use September 16, 2008, the day Lehman Brothers declared bankruptcy, as the start of the financial crisis. The different choices do not change our results qualitatively.

Figure 4 Historical Trend of China's A-Share Stock Market



This figure shows the historical daily closing prices of two market indices: The Shanghai Composite Index and the Shenzhen Composite Index. The vertical red line marks the date on which the Shanghai Composite Index reached an all-time high of 6124 points on October 16, 2007. Data are from CSMAR.

phenomenal growth in the number of listed firms, many of which are small and volatile. Does the lunar January effect exist in a constant sample or only in the sample of the newly listed firms? To answer this question, we construct two subsamples: the constant sample is composed of firms that exist in 90% of the sample period, while the non-constant sample includes the remaining firms.

Panel E in Table 10 provides the returns in lunar January and other months for these two sample compositions. The returns in lunar January are both significantly positive at the 1% level for both subsamples, whether they are equal-weighted or value-weighted. The last row shows that the returns in lunar January are significantly higher than those in the other 11 months, as we have documented for the whole A-share market. Therefore, the lunar January effect is not merely limited to the sample of newly listed firms.

5.4. Industries

We examine the lunar January effect within the whole A-share market. In this subsection, we study how it varies within industries. We divide the whole market into 28 industries according to the *Shenyinwanguo Industry Classification*. Every lunar month, we calculate the equal-weighted monthly returns for all individual stocks within each industry. We include not only the whole period but also the two subperiods, before and after the financial crisis. The returns for each industry in lunar January are shown in Table 11.

Columns (1) and (2) of Table 11 present the lunar January effect of the entire sample period for each industry. The results show that the returns in lunar January are significantly positive at the 1% level for almost all industries, except Banking,

Table 11 Robustness Check: Industries

This table presents the lunar January effect on industries. The industry classification is cited from *Shenyinwanguo Industry Classification*, which is released by the Shenyinwanguo Security Research Institute (SWS Research). The 28 industries are Transportation (TRAN), Leisure Service (LEI), Media (MED), Public Utilities (PUB), Farming, Forestry, Animal Husbandry, and Fishery (FFAF), Chemical Engineering (CHE), Medical Biology (BIO), Commerce and Trade (TRA), National Defense and Military Industry (DEF), Household Electrical Appliances (APP), Building Materials (BUI-M), Building Decoration (BUI-D), Real Estate (REAL), Non-ferrous Metals (MET), Mechanical Equipment (MEC), Automobile (AUTO), Electronics (ELE), Electrical Equipment (E-EQUI), Textile and Garment (TEX), Composite (COM), Computer (COMP), Light Manufacturing (LMAN), Communications (COMM), Mining (MIN), Steel (STE), Banking (BANK), Non-banking Finance (FIN), and Food and Beverage (FOOD). We construct 28 equal-weighted industry portfolios and calculate the mean returns in lunar January for the whole period and two subperiods defined in the same way as those in Table 10. Returns are in percentages. *t*-statistics are in parentheses. The sample period is from lunar December 1994 to lunar November 2019, a total of 300 months. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Periods	Whole Period		Before the 2008 Financial Crisis		Since the 2008 Financial Crisis	
Industries	Mean (1)	*t-stat* (2)	Mean (3)	*t-stat* (4)	Mean (5)	*t-stat* (6)
TRAN	6.816***	4.635	5.207**	3.014	8.559***	3.562
LEI	7.984***	4.589	6.994**	2.747	9.056***	3.729
MED	8.134***	4.197	6.250**	2.713	10.175***	3.206
PUB	8.127***	5.169	6.171***	3.082	10.246***	4.287
FFAF	9.215***	4.987	6.966***	3.321	11.652***	3.824
CHE	7.631***	5.120	5.610**	2.864	9.821***	4.518
BIO	6.986***	4.473	5.079**	2.310	9.051***	4.208
TRA	6.904***	4.246	5.118**	2.469	8.838***	3.525
DEF	8.191***	4.616	6.340**	2.802	10.197***	3.709
APP	7.171***	4.283	4.629**	2.499	9.925***	3.659
BUI-M	8.874***	4.974	7.125**	2.973	10.768***	4.055
BUI-D	8.148***	4.871	6.867**	2.809	9.535***	4.136
REAL	7.960***	4.195	7.057**	2.967	8.938**	2.898
MET	8.302***	4.422	5.575**	2.877	11.257***	3.549
MEC	7.542***	4.659	5.412**	2.831	9.849***	3.816
AUTO	7.964***	4.940	5.821***	3.219	10.285***	3.886
ELE	8.427***	4.416	5.449**	2.445	11.653***	3.914
E-EQUI	7.645***	4.748	5.111**	2.527	10.390***	4.378
TEX	7.839***	4.947	6.611**	2.796	9.170***	4.325
COM	8.949***	5.022	6.927**	2.708	11.139***	4.601
COMP	9.089***	4.379	6.847**	2.826	11.518***	3.380
LMAN	8.034***	4.955	5.518**	2.682	10.761***	4.527
COMM	8.270***	4.060	4.336*	1.973	12.532***	3.967
MIN	6.255***	4.339	5.694***	3.358	6.862**	2.805
STE	5.730***	3.664	4.622***	3.215	6.931**	2.388

Table 11 (*Continued*)

Periods / Industries	Whole Period		Before the 2008 Financial Crisis		Since the 2008 Financial Crisis	
	Mean (1)	*t-stat* (2)	Mean (3)	*t-stat* (4)	Mean (5)	*t-stat* (6)
BANK	2.041	1.361	0.368	0.215	3.853	1.550
FIN	7.750***	3.477	6.405***	3.084	9.207**	2.226
FOOD	6.241***	4.349	4.288**	2.406	8.357***	3.804

which is insignificant. In the subperiods before and after the 2008 global financial crisis, as shown in columns (3) to (6), we document the same pattern as in the whole sample: the banking industry is the only one that did not show the lunar January effect before and after the financial crisis; all of the other 27 industries showed a significant lunar January effect in both periods. As in the previous subsection, we also find a stronger lunar January effect after the financial crisis: the returns in lunar January are higher for all industries, and most of them have larger, more significant *t*-statistics in the more recent period.

In sum, our results indicate that there is a strong lunar January effect in China's A-share stock market. This is not only shown in the whole market and in the two subsamples, but also across all industries in the full sample and the two subsample periods.

6. Conclusions

Starting in late solar December, people in China prepare to go home for Chinese New Year. During this season, millions head back to their hometowns to reunite with their families and celebrate the most important festival of the year. While the solar New Year has become important in some Chinese people's lives, it cannot replace the Chinese New Year in significance.

In this paper, we use an extended sample from January 1995 to December 2019 and revisit the January effect in China's A-share stock market from the perspective of the Chinese lunar calendar. Lunar January can span from late January to mid-March in the solar calendar. By mapping the solar calendar to the lunar calendar and constructing lunar monthly returns, we demonstrate that there is a strong January effect in the A-share stock market. Our results indicate that like many other countries, China has a January effect (intertwined with the size effect), but it is rooted in the lunar calendar, not the solar calendar. The lunar January effect also has a significant impact on the relation between stock market return and volatility, and is stronger when macroeconomic events, such as *LIANGHUI*, commence in lunar January.

We also attempt to explore the sources of the lunar January effect. Our results show that none of the tax-loss selling or window dressing hypotheses can explain the lunar January effect in the Chinese A-share market. We document a significant turn-of-the-year effect in trading volume, buy proportion, and daily return, especially on those small firms. A dramatic shift in trading volume occurs in the short period before and after the Chinese New Year, which represents an investment seasonality around the Chinese New Year that generates the lunar January effect.

This lunar January effect reflects the importance of the Chinese New Year rather than the Western New Year to Chinese people. In fact, the lunar January effect does not exist in the B-share market when it is only limited to foreign investors. Since 2001, it has also been open to domestic investors in foreign currencies. However, the lunar January effect is still much weaker than it is in the A-share market. Our evidence demonstrates that Chinese traditional culture is not only strongly rooted in society but also plays a significant role in Chinese financial markets.

This paper contributes another perspective to the research on the Chinese stock market: we should not neglect the impact of traditional culture since it guides the everyday lives of Chinese people'. Using the lunar calendar, we are able to identify the *true* January effect on the Chinese A-share market. This identification allows us to reconcile the monthly effects in the Chinese stock market with the findings from developed stock markets, which commonly have a solar January effect. As many regions in East and Southeast Asia are historically also influenced by Chinese traditional culture, we expect that the lunar January effect may also occur in those stock markets in different forms.

The Chinese government continues to open the Chinese stock market to foreign capital. For example, foreign capital can hold up to 51% of the equity of a brokerage house; hence, foreign capital could start to increase in China in the near future. Our paper emphasizes the important role of traditional culture in gaining a deeper understanding of the stock market in China, and therefore can also serve as an important reference for foreign investors in Chinese financial markets.

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