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Comedy Movies and Stock Returns of Locally Headquartered Companies: Evidence from China

Jing Lu[*]   Jiajia Wu

Chongqing University, Chongqing, 400000, China

ARTICLE INFO	ABSTRACT
	We utilize data on comedy moviegoers from 18 cities in China to investigate the impact of the positive mood triggered by these movies on the stock returns of locally headquartered listed companies. We find that although these movies have no relation to investment itself, the sentiment triggered by these movies could affect the risk decision making of investors. Moreover, the stock returns of locally headquartered companies become significantly negative after comedy movies are screened in their respective cities. These results support the mood maintenance hypothesis. This research also provides new evidence for the presence of home bias in capital markets. **JEL Classification: G11; G12**

1. Introduction

Theoretically, optimal portfolios must be on the efficient frontier of risky assets, and the investment proportion of each risky asset is currently determined only by its contribution to the total risk of the portfolio and has nothing to do with the subjective judgment of investors. In 1952, Markowitz [41] proved that such portfolio can take the smallest variance (i.e., risk) at the same time to obtain the maximum expected return. However, in capital markets, the proportion of risky assets in the portfolios of investors tends to deviate from the weight of the optimal portfolio. One typical anomaly in these markets is home bias, which means that investors will disproportionately trade domestic stocks and prefer to hold or purchase shares of locally headquartered firms [13,20,29]. Previous studies find that home bias is mainly observed in international investments. Although investors are aware of the benefits of diversifying their international asset investments, they tend to prefer domestic stocks in their allocation of domestic and foreign equity portfolios. French and Poterba[50] found that investors in the US allocate nearly 94% of their funds to domestic securities even though the US equity market comprises less than 48% of the global equity market. Home bias also exists in other capital markets [13], and scholars have examined such problem from the perspectives of domestic and foreign capital flows, tariffs, and transaction costs constraints [5,46], the differences in purchasing power parity [12], the international boundaries or differences in the characteristics of capital markets, and the geographical proximity [1,30,34]. These explanations are mainly based on market segmen-

tation and asymmetric information. Market segmentation restricts the funds in and out of borders and results in tax and accounting differences in some countries, thereby motivating investors to hold domestic stocks. Asymmetric information states that investors will neglect assets portfolio theory, choose familiar stocks, and buy domestic stocks because they can easily obtain more information about these listed companies from the local news media, employees, managers, and material suppliers [23,45]. Graham *et al.* [19] examined home bias from the perspective of subjective adjustment and posited that the competitive advantages of the subjective perception of investors may affect the investment bias. For example, those investors who think that they are proficient in overseas asset risks and returns tend to invest in more overseas stocks, while those who are not familiar with international investment will avoid investing in overseas stocks. Later studies show that home bias may also exist in a domestic capital market without any capital flow restrictions and tax discrimination. For example, Loughran and Schultz [40] found that the time zone in the headquarter city of a listed company will affect the trading behavior of its stocks. If the headquarter city of a company is experiencing a snowstorm, then the trading volume of its stocks will significantly decrease. Similarly, the stock trading volume of those companies that are headquartered in cities with many Jews will substantially decrease during Yom Kippur holidays. However, the work of Loughran and Schultz [40] may be special in a sense because the continental US is divided into four time zones while stock exchanges and brokers are usually gathered at New York. When the NYSE opens its quotation at morning, the investors located in the Pacific Time Zone (such as California) are sleeping and unlikely to submit their orders, thereby generating a difference in trading volume.

Therefore, home bias and the factors that affect such are worth investigating in those areas without any cross-border investment restrictions, tariffs, and domestic time zone differences. To extend the findings from the literature, this paper examines home bias from the behavioral finance perspective. We take the number of comedy moviegoers from 18 cities in China as a proxy for investor sentiment to study how the mood of investors in a city as triggered by these movies can affect the stock returns of those listed companies that are headquartered in the same city. The stock returns of locally headquartered companies in 17 cities significantly decrease in the trading day that follows the screening of such movies. The reduction in the stock returns of 15 out of these 17 cities is at least 5% significant. Similar results are obtained when the number of comedy moviegoers is taken as the explanation vari-

able, that is, the reduction in the stock returns of 16 cities is at least 5% significant. An analysis based on the equally weighted returns of each city reveals that screening a comedy movie will significantly reduce the stock returns of a city by 0.0647% at the 5% level, and the annualized return will decrease by 13.425% when risk-free returns and transaction costs are excluded. Therefore, the positive emotions of investors as triggered by comedies have a significant negative impact on the expected return of local stocks, thereby proving the existence of home bias in the domestic capital market and verifying the mood maintenance hypothesis (MMH), which posits that after feeling a positive emotion from watching a comedy movie, investors attempt to maintain such positive emotion by avoiding risky investment activities and adopting conservative investment strategies, thereby reducing stock returns.

Our study contributes to the literature in several ways. First, we find that local bias may exist inside the capital market of a country. Previous studies suggest that investors may show investment bias in international capital markets because of cross-nation investment restrictions and information asymmetry. If we limit our sample to the domestic stock market, then we can effectively control the impacts of cross-nation investment restrictions, accounting principle differences, information acquisition differences, and risk-free return differences, thereby facilitating the analysis of a clean investment environment.

Second, we further investigate how the emotions of investors affect capital pricing as suggested in several studies [2,3,7,22,48,49]. Some psychological experiments and empirical studies show that emotions can affect the behavior and decisions of humans and make them irrational. Baker and Wurgler [2] and Brown and Cliff [7] argue that if investors hold a highly positive sentiment, then shorter years after IPO, lower market equities, higher volatility, and higher growth could result in lower returns in the future. Brown [6] and Lee *et al.* [38] explained the impact of investor emotion on stock market fluctuations. They took economy or investment survey data as indices of consumer confidence, used investor intelligence to measure the emotions of investors, and used proxies that were indirectly related to investment to construct a composite sentiment index. Meanwhile, Baker and Wurgler [2] used closed-end fund discount, turnover ratio, number of IPOs, average first-day returns, share of equity issues in total equity and debt issues, and dividend premium to construct a BW sentiment index. Even if the factor that results in fluctuating investor emotions has no direct relationship with economic or investment fundamentals, this factor—as long as it changes the emotions and risk attitudes of investors—may change the decision-making behavior of inves-

tors because their emotions can influence their investment decision factors, including risk tolerance, risk perception, risk preference, and information processing procedure for generating expectations [31,44].

Third, although watching comedy movies has nothing to do with capital market investments, these movies induce positive emotions and the persistence of such emotions may force investors to adopt conservative strategies when making risky investments. Movies not only provide leisure but also have a profound impact on the social economy. Compared with other ways of expressing emotions, a film's sense of the screen and story can greatly affect people's emotions and thinking as well as generate a lasting impact on their emotions. Forgas *et al.* [18] investigated the social cognitive judgments of moviegoers before and after watching three types of films (e.g., comedy, tragedy, and action films), and their experiments revealed that these films had a strong impact on their emotions and that different types of movies could induce various types of feelings. For instance, moviegoers become highly anxious, bored, or uneasy after watching a tragedy movie yet become relaxed, happy, and at ease after watching a comedy movie [24]. The impact of movies on the emotions of moviegoers is highly concentrative and consistent. On the one hand, each movie conveys a specific theme and value. For instance, a comedy movie is generally relaxed and pleasant, a suspense movie makes people nervous and reflective, and a disaster movie makes people feel depressed. On the other hand, a film produces the same emotional impact on the same group of viewers, and this emotional impact has a certain degree of continuity and may even change the stock returns for the next day. Lepori [39] empirically examined the relationship between comedy movies and stock returns in the US market. By using the number of comedy moviegoers as a proxy for investor sentiment, Lepori found that the positive emotions triggered by comedy movies have a negative impact on stock returns.

Fourth, this study provides new evidence to support the MMH of Isen [25], who suggests that people tend to maintain a positive emotion by avoiding critical thinking and complex information processing. Kliger and Kudryavtsev [35] argued that people usually maintain a positive emotional state under such psychological influence and that their emotions can cause violent behavioral fluctuations when outside information is present. Previous studies have mainly tested the emotional hypothesis by conducting experiments. For example, Isen and Patrick [28] and Isen and Geva [26] sent small gifts to participants during an experiment to help them build a positive emotion. When these participants perceived a greater potential risk, their

stake is smaller than that of neutral participants. Isen *et al.* [27] discovered that compared with the control group, the participants with a positive emotion hold highly negative and sensitive assessments on risk taking. Therefore, these participants show negative subjective motivations. Williams *et al.* [47] found that managers with positive emotions are very optimistic about risk-related uncertainty but are reluctant to take risks in real-world situations. This paper goes far from the experiment framework and mode by using real data to test MMH.

Fifth, previous studies have mostly focused on highly efficient developed capital markets where the stock price can quickly absorb information, such as in Lepori [39]. Emerging capital markets such as China have low market efficiency, and the presence of home bias in these markets warrants further research.

Similar to our work, Chang *et al.* [10] and Lepori [39] examined the effects of the National Football League (NFL) and comedy movies on the stock market, respectively. Based on the work of Edmans *et al.* [16], Chang *et al.* [10] examined the relationship between NFL results and the stock returns of locally headquartered companies, and found that both the victory and defeat of the local team would affect the future stock returns in NASDAQ. Losing has a more significant negative impact on the local stock returns than winning. This study not only confirms the existence of home bias but also shows that investor sentiment can affect the capital market. However, our research bears some differences from that of Chang *et al.* [10]. First, Chang *et al.* [10] examined the impact of sports on the emotions of market participants, while our study examines the influence of arts and crafts on these emotions. Sports and arts are two important collective activities in the history of human civilization that best reflect social civilization and activity. For example, the Olympic Games are still being played after their introduction in Greece over 2000 years ago, and the ancient Greek dramas "Agamanche" and "Prometheus" are still being performed for over 2500 years. These collective activities will significantly affect the mood of their audience as well as change their subsequent risk-taking behavior and judgments. Second, the results of one NFL game can only be used to observe the stock returns and trading activities at the cities of the host and visiting teams, while movies can be released at many cities simultaneously. Our research simultaneously investigates how the mood of moviegoers affects the stock returns of 920 companies in 18 cities. Third, although China roughly has the same land area as the US, this former only has one time zone and has a better control over the impact of time zone differences.

Our study also significantly differs from that of Lepori

[39], who found a significant relationship between watching movies and stock returns. First, Lepori [39] calculated the number of comedy moviegoers by dividing the total box office gross income in the US by the average ticket prices. However, the differences in the ticket prices of the same movie across various cities may lead to inaccurate calculation results. By contrast, we directly count the number of people who are watching comedy movies. Second, Lepori [39] only examined the impact of comedy movies on Monday stock returns based on weekly data, while we analyze the influence of comedy movies on the next day's stock returns based on daily data. Third, Lepori [39] examined the impact of comedies on the market index returns, while we examine individual stock returns and their effects on home bias. By using the number of moviegoers in 18 cities, we study the impact of emotions on the investment decision-making behaviors of investors.

The rest of this paper is organized as follows. Section 2 describes the sample and presents the summary statistics. Section 3 examines the impact of comedy movies on stock returns. Section 4 presents the results of robustness checks. Section 5 concludes the paper.

2. Data and Descriptive Statistics

2.1 Taking the Number of Moviegoers as a Proxy for Investor Emotion

The demand for leisure and entertainment in China has increased along with the rapid development of its economy. With the increasing per capita income and intellectual property protection in the country, China's urban residents are increasingly becoming accustomed to watching movies in the cinema, thereby increasing box office revenues. As early as 2012, mainland China's box office revenues increased to 17 billion RMB (about 2.7 billion USD), thereby overtaking Japan as the world's second largest film market after the US. In 2013, the box office revenues and number of domestic moviegoers in China reached 21.8 billion RMB and 612 million, respectively, while the local box office receipts in 2014 reached a new record of 29.6 billion RMB. Watching movies has become an indispensable source of entertainment for urban residents. The influence of the Chinese movie market is growing and has penetrated into the daily lives of the Chinese people, thereby motivating researchers to study whether movies can affect people's emotions. Similar to Lepori [39], we use the number of comedy moviegoers as emotion-triggering events to analyze the impact of investor sentiments on China's stock market as well as to check if the local bias exists and if the mood maintenance hypothesis holds in this market. Lepori [39] focuses on the impact of screening comedy movies during weekends on the Monday returns of the entire US stock market. Based on Lepori [39], we examine the impact of screening comedies on the local stock market returns of China in the next trading day for three years. According to the *2012–2013 Chinese Cinema Development Study Report* from Chinese ENTGroup, the box office revenues of 18 major cities, including Beijing and Shanghai, account for more than half of the country total. Therefore, this paper chooses the number of comedy moviegoers in these 18 cities as a proxy for investor sentiment.

Given that the sample period of our investor sentiment proxy begins on March 19, 2012, we use March 19, 2012 to March 18, 2015 as our study period. We manually collect online ticket data on the number of daily comedy moviegoers in 18 cities from the National Film Score Network. According to the China Film Association [11] and the China Federation of Literary and Art Center (2014), online ticketing has become a mainstream method for selling movie tickets in China due to the popularity of the Internet and the widespread use of smartphones. Selling tickets online has many advantages over selling tickets in the cinema. First, online ticket prices are highly transparent and are 50% cheaper than those sold at the cinema. Second, selling tickets online can result in significant labor cost savings. Third, online ticketing allows moviegoers to attend online screenings, book their seats, and plan their entire moviegoing experience. Fourth, online tickets are ready to use and are dispatched at a shorter time compared with those sold in cinemas. Therefore, online ticket sales account for 50% to 60% of the total box office revenues in some large cities in China, such as Shanghai. According to the *2012–2013 Chinese Cinema Development Study Report*, the Chinese movie market is highly concentrated in urban areas, with the box revenues in cities accounting for 68.2% of the country total. Although the ticket sales data from the National Film Score Network cover about 50 cities in China, most cities, especially those with a small number of listed companies, hold few screenings and show few comedies. The relationship between screening comedy movies and the stock returns of local listed companies cannot be easily analyzed for those cities with few or no listed companies. Therefore, we only use the movie screening data of 18 cities that have many moviegoers and listed companies. These cities include Beijing, Chengdu, Chongqing, Dalian, Fuzhou, Guangzhou, Hangzhou, Kunming, Nanjing, Ningbo, Shanghai, Shenyang, Shenzhen, Suzhou, Tianjin, Wuhan, Xi'an, and Zhengzhou. According to ENTGroup, these 18 cities altogether generated a box office revenue of 9.7 billion RMB in 2012, accounting for 56.52% of the country total.

We collect our data from the statistics page of the National Film Score Network website, which provides data on showing times, audience numbers, ticket prices, and box office revenues in each city. We only consider those movies that have been screened for over 100 times from March 19, 2012 to September 31, 2015 and excluded those movies that have been screened repeatedly during this period. We eventually obtain a list of 1,077 movies. Those movies that show similarities in their narrative elements are classified into a single "type." Movie types are commonly classified based on their scenes, emotions, and forms. Specifically, movies can be classified into crime, history, science fiction, sports, war, and western in terms of scene, action, adventure, comedy, drama, fantasy, horror, romance, and thriller in terms of emotion, and cartoons, brochures, documentaries, music, and short films in terms of form. As the local version of IMDb, an online database of films, television shows, and video games, Mtime is the most comprehensive film and television drama database in China that classifies movies based on their scene, mood, or form. We follow the same classification in our study to identify comedy movies. To ensure the effectiveness and rationality of our classification, we refer to the movie reviews posted on Mtime and Movie Douban, another famous film website in China. We classify a movie as a comedy if it is also classified as a comedy in both of these websites and if more than 80% of the movie reviews from these websites describe this movie as funny or humorous. We collect the names, types, showing times, and scores of 1,077 movies from Mtime and Movie Douban and eventually obtain a list of 246 comedies. Lepori [39] studied the impact of weekend (Friday to Sunday) comedy movie attendance on Monday stock market returns. Following Lepori [39], we use the daily number of comedy moviegoers in every city, *comedy*, as a proxy for next day's investor sentiment to analyze the impact of screening comedies on the daily stock return of locally listed companies. Given that no stock trading activities are conducted on Saturdays and Sundays, we use the number of comedy moviegoers during these two days as a proxy for investor sentiment. If two or more comedies are being screened on the same day, we use the total number of moviegoers who watched these comedies as a proxy for investor sentiment.

2.2 Stock Variables

We obtain a list of 920 companies that are located in the selected 18 cities and are listed on the A-share markets of the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) (see Table A1). By the end of 2014, these 920 listed companies accounted 50.06% of all

listed companies at SSE and SZSE, whereas their market value accounts for 51.77% of the total market value in these exchanges. We collect data on daily stock returns from the RESSET database.

Table A1. Listed companies, latitude, and residents of 18 cities

City	Number of listed companies at the A share markets of SSE and SZSE	Latitude	Permanent residents (thousands)
Beijing	159	N 39.92°	12,400
Chengdu	39	N 30.67°	7,570
Chongqing	34	N 29.59°	8,020
Dalian	23	N 38.92°	6,920
Fuzhou	26	N 26.08°	7,310
Guangzhou	50	N 23.16°	12,880
Hangzhou	54	N 30.26°	8,820
Kunming	19	N 25.04°	6,550
Nanjing	40	N 32.04°	8,170
Ningbo	31	N 29.86°	7,650
Shanghai	161	N 31.22°	14,280
Shenyang	16	N 41.80°	8,240
Shenzhen	138	N 22.62°	10,580
Suzhou	26	N 31.32°	6,530
Tianjin	30	N 39.13°	11,800
Wuhan	35	N 30.52°	10,170
Xi'an	23	N 34.27°	8,570
Zhengzhou	16	N 34.76°	9,110
Total	920	-	165,570

Note: This table presents general information on the 18 selected cities. The number of listed companies is the number of A-share companies that are listed on the main boards of the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). The population of permanent residents is the average resident population from 2012 to 2015. The population data of Beijing and Chongqing only include the urban resident population of these cities.

2.3 Control Variables

First, we use the number of daily moviegoers in the selected 18 cities, *all*, as a control variable. According to Lepori [39], box office revenues directly affect the income of a film production company, which means that an increase or decrease in the number of moviegoers may have an economic impact on the market value of listed movie companies and their stock returns. According to statistical data from SSE and SZSE, eight listed companies on the A-share market are directly related to the movie market, including Huayi Brothers (300027.sz), Bluefocus (300058.sz), LeTV (300104.sz), Huace Film & TV (300133.sz), Enlight Media (300251.sz), HualuBaina Film & TV (300291.sz), Ourpalm (300315.sz), and Beijing Bashi

Media (600386.sh). Therefore, we use the number of general moviegoers as an explanatory variable to control the economic impact of movie screenings. In psychological experiments, the subjects are often asked to watch movie clips, but in real life, people can choose movies or other recreational methods (e.g., shopping and sports). Therefore, watching comedy movies may have a direct or indirect impact on the stock market. As a direct effect, comedy movies incite positive moods that can affect the decisions of their audience, while as an indirect effect, watching these movies can affect the emotions of their audience. Following Lepori [39], we control such indirect impact by controlling the number of moviegoers.

Second, we must control the effects of seasonal affective disorder (SAD), an emotion or mood disorder that is usually observed in days with shorter daylight, especially at the end of fall and at the beginning of winter. SAD is considered a form of depression with several symptoms, including insomnia, drowsiness, depression, anxiety, despair, fatigue, and distraction. Individuals with SAD usually demonstrate symptoms of mood disorders in days with shorter daytime and longer nighttime. Many economic studies have described the economic effects of SAD. For instance, Kamstra *et al.* [32] validated the impact of SAD on the stock market returns of some countries. SAD emerged as the most significant of the seven proxies for investor sentiment used by Dowling and Lucey [14] to analyze the impact of such sentiment on stock returns. Kramer and Weber [37] studied the relationship between the investment cash flow of mutual funds in the US and the onset and recovery of the SAD effect, and found that the cash flowed from the equity fund to the monetary market fund during fall and flowed in the opposite direction during spring. Following Kamstra *et al.* [33], we use the relative length of nighttime to measure SAD. Given that SAD is a mood disorder that is frequently observed in autumn and winter, SAD takes a value of 0 from March

21 to September 20 of each year. We calculate the SAD of each city according to its respective latitude (see Table A1).

Because the end of the tax year in China is 31 December, following Dyl *et al.* [15], we control the tax effect, Tax_t, which takes a value of 1 from the first trading day to the seventh trading day in each year, and takes a value of 0 for the other trading days.

2.4 Descriptive Statistics

A total of 726 trading days takes place from March 19, 2012 to March 18, 2015. Table 1 presents the number of general moviegoers, number of comedy moviegoers, and stock returns for the 18 selected cities. As shown in Table 1, 726 observations are obtained for both the general and comedy moviegoers. We compute the number of stock return observations by multiplying the number of listed companies by the number of trading days. Given that each city has a different number of listed companies, each city also has a different number of stock return observations. Each city has an average of 4,406 comedy moviegoers and 19,603 general moviegoers. The average and maximum number of general moviegoers in Beijing, Shanghai, Shenzhen, and Guangzhou are significantly higher than those in other cities. Beijing has an average of 89,809 daily general moviegoers (with a maximum of 677,430), which is nearly 50 times larger than that of Dalian (1,822). Shanghai and Shenzhen have the second and third largest number of daily moviegoers after Beijing, respectively. Among the 18 selected cities, only 8 have more than 10,000 daily general moviegoers, including Beijing, Shanghai, Shenzhen, Guangzhou, Chongqing, Hangzhou, Tianjin, and Kunming. Beijing and Shanghai have 20,727 and 10413 daily comedy moviegoers, respectively, both of which are far greater than those of Dalian, Fuzhou, and Shenyang.

Table 1. Descriptive statistics of 18 cities

City	Variables	Obs.	Mean	Std.Dev.	Min.	Max.
Beijing	*comedy*	726	20,727	40,031.62	0	481,603
	all	726	89,809	105,735.3	0	677,430
	R	107,951	0.001346	0.025823	−0.10061	0.736
Chengdu	*comedy*	726	1,981	4,432.191	0	48,853
	all	726	9,328	14,796.28	0	135,174
	R	26,312	0.00142	0.02705	−0.1004	0.731343
Chongqing	*comedy*	726	6,776	12,559.82	0	158,669
	all	726	32,259	35,565.58	0	229,215
	R	21,721	0.001383	0.029	−0.10041	1.788624
Dalian	*comedy*	726	502	1,996.098	0	32,704
	all	726	1,822	4,502.76	0	39,486
	R	15,749	0.000917	0.024263	−0.10038	0.101818

City	Variables	Obs.	Mean	Std.Dev.	Min.	Max.
Fuzhou	*comedy*	726	831	3,799.482	0	60,087
	all	726	3,347	11,745.68	0	109,810
	R	17,676	0.001444	0.026863	−0.10035	0.172965
Guangzhou	*comedy*	726	6,106	14,567.17	0	184,011
	all	726	27,560	43,212.54	0	348,204
	R	34,335	0.00142	0.026526	−0.10082	1.377778
Hangzhou	*comedy*	726	5,971	11,079.73	0	113,996
	all	726	28,397	31,059.12	0	212,421
	R	36,302	0.001541	0.027342	−0.10094	0.772592
Kunming	*comedy*	726	2,471	4,685.516	0	43,786
	all	726	11,506	31,059.12	0	81,324
	R	12,434	0.001068	0.024843	−0.10022	0.440164
Nanjing	*comedy*	726	1,609	3,732.309	0	48,542
	all	726	7,341	10,680.29	0	77,184
	R	27,141	0.001239	0.025119	−0.10023	0.439768
Ningbo	*comedy*	726	784	2,453.347	0	42,506
	all	726	3,108	5,716.906	0	57,268
	R	21,665	0.00108	0.02489	−0.10069	0.101695
Shanghai	*comedy*	726	10,413	21,364.74	0	224,733
	all	726	48,207	60,536.39	0	406,153
	ret	110,015	0.001484	0.026744	−0.25569	1.088571
Shenyang	*comedy*	726	612	2,076.655	0	37,740
	all	726	2,318	5,260.889	0	57,260
	R	10,767	0.001194	0.025736	−0.10082	0.101493
Shenzhen	*comedy*	726	9,735	19,576.78	0	217,611
	all	726	43,294	59,441.78	0	382,297
	R	95004	0.001439	0.026678	−0.10101	0.37064
Suzhou	*comedy*	726	2,215	6,953.42	0	124,056
	all	726	9,629	16,808.19	0	164,436
	R	18,170	0.001349	0.026542	−0.10031	0.101083
Tianjin	*comedy*	726	4,257	9,758.568	0	156,195
	all	726	17,393	24,098.76	0	199,419
	R	21,108	0.001413	0.027465	−0.10073	0.845
Wuhan	*comedy*	726	2,015	6,785.815	0	100,405
	all	726	8,636	18,813.84	0	161,946
	R	23,998	0.001166	0.024815	−0.10055	0.101266
Xi'an	*comedy*	726	1,568	3,232.196	0	33,099
	all	726	6,591	8,518.248	0	66,826
	R	15,476	0.001297	0.026034	−0.22644	0.666667
Zhengzhou	*comedy*	726	740	2,710.709	0	33,064
	all	726	2,320	6,209.512	0	44,862
	R	11,205	0.000759	0.023567	−0.10017	0.100985

Note: This table presents statistics on the comedy moviegoers, general moviegoers, and stock returns of each city. A total of 921 trading days took place from March 19, 2012 to March 18, 2015. *comedy* denotes comedy moviegoers, *all* denotes general moviegoers, and *R* denotes stock returns.

Table 2. Descriptive statistics of main variables

Variables	Obs.	Mean	Std.Dev.	Min.	Max.
R	13,068	0.001295	0.014644	−0.068707	0.053873
comedy	13,068	4,406.31	14,277.64	0	481,603
all	13,068	19,603.63	42,999.10	0	677,430
Tax	13,068	0.028926	0.167604	0	1
SAD	13,068	−0.061960	0.063878	−0.130785	0

Note: A total of 13,068 (18×726) observations are obtained for the 18 cities. *comedy* denotes comedy moviegoers, *all* denotes general moviegoers, *R* denotes the equally weighted stock returns of listed companies at city c, *Tax* denotes the tax effect that is equal to 1 from the first trading day to the seventh trading day of each year and equal to 0 for the other trading days, and *SAD* denotes the seasonal affect disorder.

Table 2 presents the descriptive statistics of the main variables of the 18 cities. A total of 13,068 observations are obtained from these cities (18×726). In Table 2, *all* represents the number of general moviegoers, *comedy* represents the number of comedy moviegoers, *Ret* denotes the equally weighted returns of the listed companies headquartered in each city, *Tax* denotes the tax effect, and *SAD* denotes the value of SAD. *Ret*, *Tax*, and *SAD* have average values of 0.001295, 0.028926, and –0.06196, respectively.

3. Empirical Test

To test whether the mood of local investors will affect the stock returns of locally headquartered listed compa-

nies, we perform an OLS regression on the number of moviegoers and the local stock returns of the 18 cities. We construct our basic model, model I, as follows:

$$R_{it} = \alpha_0 + \alpha_1 R_{i,t-1} + \alpha_2 D_{i,t-1} + \alpha_3 Tax_t + \alpha_4 SAD_t + \varepsilon_{i,t} \quad (1)$$

where R_{it} is the stock return of listed company i on day t, Tax_t is the dummy variable of tax effect, and $D_{i,t-1}$ is the dummy variable of whether a comedy will be shown on day t-1 in the city where a company is headquartered. $D_{i,t-1}$ takes a value of 1 if a comedy movie is screened in the city, and takes a value of 0 otherwise.

Table 3 presents the regression results for the 18 cities.

Table 3. Impact of screening comedy movies on the stock returns in each city

	$R_{i,t-1}$	$D_{i,t-1}$	Tax_t	SAD_t	$cons$	Wald chi2	Obs
Beijing	0.030521***	–0.001628***	–0.002101***	–0.007450***	0.001951***	137.13***	84,248
	(5.00)	(–7.49)	(–2.44)	(–6.78)	(9.68)		
Chengdu	0.029326***	–0.000682**	–0.002845**	–0.008097***	0.001087***	19.86***	20,529
	(2.48)	(–1.96)	(–2.35)	(–3.16)	(3.28)		
Chongqing	0.040847***	–0.002495***	–0.004973***	–0.005980**	0.002788***	126.29***	16,936
	(3.39)	(–7.55)	(–5.73)	(–3.21)	(8.66)		
Dalian	0.034304**	0.001401***	–0.002312*	–0.004018*	–0.000076	35.16***	12,295
	(2.28)	(5.12)	(–1.71)	(–1.86)	(–0.36)		
Fuzhou	0.027074***	–0.000152	–0.002595	–0.003839	0.001018***	11.69***	13,787
	(2.68)	(–0.39)	(–1.43)	(–1.33)	(2.94)		
Guangzhou	0.036823***	–0.002095***	–0.003833***	–0.005137***	0.005137***	92.64***	26,809
	(3.83)	(–6.47)	(–3.83)	(–2.85)	(8.75)		
Hangzhou	0.037318***	–0.000952**	0.000084	–0.000538	0.001796***	28.50***	28,337
	(4.38)	(–2.43)	(0.07)	(–0.28)	(5.50)		
Kunming	0.041997**	–0.002609***	–0.005848***	–0.009074**	0.002621***	69.96***	9,694
	(2.31)	(–4.98)	(–3.72)	(–2.80)	(6.26)		
Nanjing	0.018393*	–0.001246***	–0.002225*	–0.001934	0.001940***	19.10***	21,185
	(1.87)	(–3.22)	(–1.87)	(–0.97)	(5.60)		
	$R_{i,t-1}$	$D_{i,t-1}$	Tax_t	SAD_t	$cons$	Wald chi2	Obs
Ningbo	0.014916	–0.000881**	–0.004123***	–0.005214*	0.001291**	38.49***	16,926
	(1.55)	(–2.08)	(–4.28)	(–2.32)	(3.87)		
Shanghai	0.039839***	–0.001364***	–0.004423***	–0.001687*	0.002486***	240.04***	85,935
	(6.03)	(–5.69)	(–8.74)	(–1.65)	(11.86)		
Shenzhen	0.029732***	–0.001783***	–0.000652	–0.002863***	0.002564***	113.65***	74,110
	(6.25)	(–7.53)	(–0.84)	(–2.69)	(12.33)		
Shenyang	0.030451**	–0.002334***	–0.003420**	–0.00580*	0.002611***	24.86***	8,405
	(2.13)	(–3.79)	(–2.08)	(–1.95)	(5.89)		
Suzhou	0.019540*	–0.000612	–0.000843	–0.001210	0.001315***	7.97*	14,180
	(1.92)	(–1.31)	(–0.46)	(–0.39)	(3.68)		
Tianjin	0.023831**	–0.001496***	–0.003959***	–0.011159***	0.001887***	30.84***	16,474
	(2.03)	(–3.78)	(–2.70)	(–4.23)	(5.90)		
Wuhan	0.008173	–0.001382***	–0.003611***	–0.005872**	0.001596***	37.57***	18,726
	(0.93)	(–4.33)	(–3.04)	(–2.80)	(5.48)		
Xi'an	0.012050	–0.002477***	–0.001885	–0.003793	0.002625***	33.27***	12,084
	(1.03)	(–5.21)	(–1.01)	(–1.21)	(6.58)		
Zhengzhou	0.005558	0.001023**	–0.004824***	–0.001934	0.000052	27.72***	8,751
	(0.37)	(2.13)	(–3.74)	(–0.62)	(0.23)		

Note: This table reports the regression results of screening comedy movies on returns. The explained variable is R_{it}, which denotes the stock return of company i on day t. $D_{i,t-1}$ is the dummy variable that equals to 1 if a comedy movie is shown on day t-1 in the city where company i is headquartered and equals to 0 otherwise. *Tax* denotes the effect that equals to 1 from the first trading day to the seventh trading day of each year and equals to 0 for the other trading days. *SAD* denotes the seasonal affect disorder and *Cons* is constant. The standard errors are clustered at the firm level and the z-statistics are reported in parentheses. *, **, and *** denote significance at the 1%, 5%, and 10% levels, respectively.

The screening of comedy movies significantly affects the returns of listed companies in 13 cities, thereby suggesting that the mood of investors triggered by comedy movies has a significant impact on local stock returns. We also infer that local investors prefer to hold or purchase shares that are issued by local companies. Compared with investors outside the city, local investors are more familiar with local listed companies and have more channels from where they can obtain information. Most of these investors are local people with local feelings and are proud of their local language, social environment, and cultural environment.

Therefore, they prefer to support local listed companies.

With the exception of Dalian and Zhengzhou, the positive moods triggered by watching comedy movies have a negative impact on the stock returns in the 16 other cities. The estimated coefficients for the comedy effect in 11 cities is significant at 1%, including Beijing (−0.001628), Chongqing (−0.002495), Guangzhou (−0.002095), Kunming (−0.002609), Nanjing (−0.001246), Shanghai (−0.001364), Shenzhen (−0.001783), Shenyang (−0.002334), Tianjin (−0.001496), Wuhan (−0.001382), and Xi'an (−0.002477). By contrast, the estimated coeffi-

Table 4. Impact of comedy moviegoers on the stock returns in each city

	$R_{i,t-1}$	$comedy_{i,t-1}$	$all_{i,t-1}$	Tax_t	SAD_t	Cons	Wald chi2	Obs
Beijing	0.024343***	−5.88E−08***	7.88E−08***	−0.002098***	−0.004890***	−0.002438***	719.96***	84,248
	(3.96)	(−8.27)	(25.41)	(−2.49)	(−4.21)	(−18.11)		
Chengdu	0.021043*	−3.09E−07**	5.33E−07***	−0.002368*	−0.001707	−0.001252***	175.74***	20,529
	(1.77)	(−2.25)	(10.94)	(−1.96)	(−0.70)	(−4.59)		
Chongqing	0.032717***	−1.44E−07***	2.01E−07***	−0.004761***	−0.004671**	−0.002443***	203.85***	16,936
	(2.74)	(−4.02)	(12.40)	(−5.76)	(−2.37)	(−8.08)		
Dalian	0.032876**	−3.48E−06***	1.31E−06***	−0.001250	−0.004459**	−0.000067	120.50***	12,295
	(2.20)	(−9.27)	(9.11)	(−0.93)	(−2.07)	(−0.33)		
Fuzhou	0.023168**	−7.87E−08	2.52E−07***	−0.002221	0.001833	0.000780**	98.40***	13,787
	(2.30)	(−0.50)	(5.40)	(−1.24)	(0.60)	(3.51)		
Guangzhou	0.031780***	9.33E−09	9.95E−08***	−0.004450***	0.000278	−0.000205	246.96***	26,809
	(3.32)	(0.34)	(10.83)	(−4.48)	(0.16)	(−1.13)		
Hangzhou	0.030830***	−2.16E−07***	2.76E−07***	0.000423	−0.003344*	−0.002849***	232.09***	28,337
	(3.59)	(−6.01)	(13.78)	(0.34)	(−1.66)	(−10.45)		
Kunming	0.031935*	−3.98E−07**	5.33E−07***	−0.005901***	−0.004925	−0.002309***	88.57***	9,694
	(1.80)	(−2.24)	(8.22)	(−3.69)	(−1.33)	(−6.37)		
Nanjing	0.011559	−7.80E−07***	8.52E−07***	−0.001704*	0.001707	−0.001303***31	318.39***	21,185
	(1.19)	(−4.70)	(16.25)	(−1.46)	(0.79)	(−6.92)		

	$R_{i,t-1}$	$comedy_{i,t-1}$	$all_{i,t-1}$	Tax_t	SAD_t	Cons	Wald chi2	Obs
Ningbo	0.010815	−9.34eE−07**	1.18E−06***	−0.004042***	−0.002017	−0.000603***	103.96***	16,926
	(1.10)	(−2.99)	(9.45)	(−4.12)	(−0.90)	(−2.99)		
Shanghai	0.034620***	−6.50E−08***	1.67E−07***	−0.004057***	−0.003323**	−0.002330***	933.20***	85,935
	(5.23)	(−4.58)	(28.79)	(−8.25)	(−3.11)	(−17.25)		
Shenzhen	0.025957***	−6.81E−08***	7.55E−08***	−0.000899	−0.001276	−0.000287***	380.25***	74,110
	(5.42)	(−4.27)	(16.45)	(−1.16)	(−1.15)	(−2.58)		
Shenyang	0.027340*	−1.85E−06***	1.10E−06***	−0.003201*	−0.002595	0.000226	58.27***	8,405
	(1.92)	(−3.64)	(5.33)	(−1.93)	(−0.81)	(0.83)		
Suzhou	0.015216	−2.54E−07**	3.69E−07***	−0.000763	0.002372	−0.000403	144.38***	14,180
	(1.44)	(−2.55)	(8.32)	(−0.41)	(0.75)	(−1.91)		
Tianjin	0.019039*	−4.21E−07***	3.15E−07***	−0.002650**	−0.008569**	−0.001299***	217.92***	16,474
	(1.59)	(−7.73)	(13.09)	(−1.88)	(−2.84)	(−4.70)		
Wuhan	0.003518	−2.52E−07***	2.51E−07***	−0.003601***	−0.001188	−0.000031	146.00***	18,726
	(0.41)	(−4.13)	(10.99)	(−2.95)	(−0.61)	(−0.17)		
Xi'an	0.004840	−1.12E−06***	1.10E−06***	−0.001511	−0.000914	−0.002127***	193.77***	12,484
	(0.43)	(−6.34)	(13.02)	(−0.82)	(−0.28)	(−7.34)		
Zhengzhou	0.003294	−8.25E−07***	5.67E−07***	−0.004557***	−0.000171	0.000142	66.61***	8,751
	(0.22)	(−3.56)	(4.60)	(−3.54)	(−0.06)	(0.62)		

Note: This table reports the regression results of comedy moviegoers on returns. The explained variable is R_{it}, which denotes the stock returns of company i on day t. $comedy_{i,t-1}$ denotes the number of comedy moviegoers on day t-1 at the headquartered city of company i, while $all_{i,t-1}$ denotes the number of general moviegoers on day t-1 at the headquartered city of company i. *Tax* denotes the tax effect that equals to 1 from the first trading day to the seventh trading day of each year and equals to 0 for the other trading days. *SAD* denotes the seasonal affect disorder and *Cons* is constant. The standard errors are clustered at the firm level and the z-statistics are reported in parentheses. *, **, and *** denote significance at the 1%, 5%, and 10% levels, respectively.

cients of comedy in Chengdu, Hangzhou, and Ningbo is significant at 5%. These results indicate that the positive mood triggered by watching comedy movies will make investors more conservative and unwilling to take risks, thereby reducing the expected stock returns. To provide additional evidence, we propose model II as follows:

$$R_{i,t} = \beta_0 + \beta_1 R_{i,t-1} + \beta_2 comdy_{i,t-1} + \beta_3 all_{i,t-1} + \beta_4 Tax_t + \beta_5 SAD_t + \varepsilon_{i,t}$$

(2)

where $R_{i,t}$ is the stock return of company i on day t, $comdy_{i,t-1}$ is the number of comedy moviegoers on day t-1 in the city where company i is located, and $all_{i,t-1}$ is the number of general moviegoers on day t-1 in the same city.

Table 4 presents the regression results of model II. Except for Guangzhou and Fuzhou, the number of comedy moviegoers in the other cities has a significant negative impact on the stock returns of local companies. Especially, the coefficients of comedy moviegoers in 10 cities, including Beijing and Shanghai, are significant at 1%, while those in the other 6 cities, including Kunming and Ningbo, are significant at 5%. This result indicates that the positive moods of investors triggered by the local screening of comedy movies have a significantly negative impact on the stock returns of local companies. The regression results for 17 cities indicate that positive investor emotions will decrease stock returns in the future, which means that people tend not to take risks when they are in a positive mood. To maintain such mood, investors tend to avoid risky investments and adopt conservative investment strategies, thereby reducing stock returns. Table 4 shows that the magnitude for the coefficient of comedy moviegoers is statistically and economically significant. For example, the returns of listed companies and the number of comedy moviegoers in Beijing have standard deviations of 0.025823 and 40,031.62, respectively. Therefore, the one-standard-deviation change of comedy moviegoers is associated with a change of 40,031.62×(–5.88E-08)=0.002354 or approximately 9.12% of a standard deviation.

The positive impact of the number of general moviegoers in all cities on stock returns is significant at 1%. This finding is consistent with the fact that the influence of box office revenues on the stock market subsequently generates a positive economic effect. At the same time, as a control variable, the number of general moviegoers is positively related to stock returns, thereby suggesting the large magnitude of the direct negative effect of watching comedy movies on the stock market. In other words, the positive mood of investors triggered by watching comedy movies has a significant negative impact on stock returns, thereby supporting MMH. The regression results of mod-

els I and II also show that for most cities, tax effect has a significant negative impact on stock returns, that is, taxes will reduce the stock returns. SAD shows a significant effect in nine cities, including Beijing and Guangzhou, and has a negative impact on the expected stock returns for all cities. Therefore, SAD can motivate people to avoid investment risks, thereby generating a negative impact on the stock market. This finding is consistent with the conclusions of Kramer and Weber [37].

We then construct the equally weighted returns of listed companies at each city as the portfolio returns on each day, $R_{c,t}$, and obtain new data on returns. We perform a regression based on models I and II, and the results are presented in Table 5. Screening comedy movies shows a significant impact on equally weighted stock returns in either models I or II, thereby proving the existence of the local bias effect. The comedy dummy in model I has a coefficient of –0.000647 and is significant at 10%, while than in model II has a coefficient of –1.03e-07 and is significant at 1%. If there are 250 trading days in a year, the risk-free returns is 1.75%, and the transaction cost is about 1%, the annualized return based on short selling comedy movie strategy could be about 13.425% (0.0647%×250–1.75%–1%). Given that the positive mood of investors triggered by watching comedy movies will have a negative effect on the expected returns, the stock returns for the 18 selected cities are expected to be lower, thereby validating MMH.

Table 5. Impact of comedy dummy and comedy moviegoers on equally weighted returns

Variables	Model I	Model II
	R_{ct}	R_{ct}
$R_{c,t-1}$	0.010981***	0.005501
	(3.81)	(–0.56)
$D_{c,t-1}$	–0.000647**	
	(–1.64)	
$comedy_{c,t-1}$		–1.03e–07***
		(–3.96)
$all_{c,t-1}$		8.08e–08***
		(3.56)
Tax	–0.003084***	–0.002977***
	(–7.56)	(–7.32)
SAD	–0.005286**	–0.004866***
	(–8.63)	(–6.90)
$Cons$	0.001291***	0.000206
	(3.47)	(–1.09)
Wald chi2	109.63***	102.02***
Obs	10,242	10,242

Notes: This table reports the regression results of comedy dummy and comedy moviegoers on returns. R_{ct} denotes the equally weighted returns

of listed companies at city c on day t. $D_{c,t-1}$ is the dummy variable that equals to 1 if any comedy movie is shown on day t-1 at city c and equals to 0 otherwise. $comedy_{c,t-1}$ denotes the number of comedy moviegoers on day t-1 at city c, while $all_{c,t-1}$ denotes the number of general moviegoers on day t-1 at city c. *Tax* denotes the tax effect that equals to 1 from the first trading day to the seventh trading day of each year and equals to 0 for the other trading days. *SAD* denotes the seasonal affect disorder and *Cons* is constant. The standard errors are clustered at the city level and the z-statistics are reported in parentheses. *, **, and *** denote significance at the 1%, 5%, and 10% levels, respectively.

4. Robustness Test

We use the proportion of comedy and general moviegoers, $Pro_{c,t}$, as the investor sentiment variable. Afterward, we replace $D_{i,t-1}$ with $Pro_{c,t}$. Given that each city screens a different comedy movie every day, $Pro_{c,t}$ may indicate how investors are influenced by the mood triggered by watching comedies. Although the 18 selected cities are all large cities in China, the number of permanent residents greatly differs across these cities. For example, the number of permanent residents in Beijing is about 12.40 million, which is almost twice larger than that of Kunming (6.55 million). Given that having more permanent residents corresponds to having more movie moviegoers, we must control the number of permanent residents in each city. Seeing that each city has a different number of permanent residents,

Table 6. Impact of ratio of comedy moviegoers to general moviegoers on returns

	$R_{i,t-1}$	$Pro_{c,t-1}$	Tax_t	SAD_t	*cons*	Wald chi2	Obs
Beijing	0.032184*	–0.001419***	–0.002132***	–0.008424***	0.000755***	99.50***	83,653
	(5.23)	(–4.07)	(–2.53)	(–7.72)	(8.01)		
Chengdu	0.033216***	–0.001642**	–0.002854**	–0.008078***	0.000933***	19.58***	19,897
	(2.8)	(–2.02)	(–2.38)	(–3.00)	(4.28)		
Chongqing	0.043914***	–0.001412*	–0.005149***	–0.006702**	0.000828**	55.26***	16,819
	(3.67)	(–1.81)	(–6.13)	(–3.66)	(3.86)		
Dalian	0.047851**	–0.010957***	0.009500***	–.014013**	0.002841***	106.28***	4,379
	(2.02)	(–8.62)	(2.99)	(–3.31)	(6.97)		
Fuzhou	0.030185***	0.000128	–0.002607	–0.002018	0.001067***	13.19***	13,572
	(2.90)	(0.20)	(–1.47)	(–0.69)	(4.41)		
Guangzhou	0.038294***	0.000937	–0.004198***	–0.005131**	0.000735***	38.58***	26,622
	(3.99)	(1.43)	(–4.28)	(–2.86)	(3.73)		
Hangzhou	0.039495***	–0.001632***	0.000110	–0.001443	0.001209***	31.28***	28,136
	(4.61)	(–2.62)	(0.091)	(–0.74)	(6.61)		
Kunming	0.043943***	–0.001570	–0.006048***	–0.010343***	0.000603	42.89***	9,626
	(2.41)	(–1.45)	(–3.87)	(–3.02)	(2.61)		
Nanjing	0.019423**	–0.002031***	–0.002112*	–0.002249	0.001253***	15.40***	21,034
	(1.99)	(–3.31)	(–1.79)	(–1.11)	(6.36)		
	$R_{i,t-1}$	$Pro_{c,t-1}$	Tax_t	SAD_t	*cons*	Wald chi2	Obs
Ningbo	0.014786	–0.000448	–0.004823***	–0.010203***	0.000612**	36.17***	15,737
	(1.43)	(–0.75)	(–4.94)	(–4.43)	(3.07)		
Shanghai	0.041065***	–0.000871**	–0.004509***	–0.002727**	0.001412***	151.76***	85,329
	(6.21)	(–2.55)	(–9.12)	(–2.65)	(15.09)		
Shenzhen	0.031308***	–0.000318	–0.000917	–0.003634**	0.001037***	58.30***	73,590
	(6.61)	(–0.81)	(–1.20)	(–3.40)	(9.54)		
Shenyang	0.033971**	–0.001147	–0.003794**	–0.005892*	0.000992***	11.03**	8,333
	(2.39)	(–1.07)	(–2.30)	(–1.94)	(4.34)		
Suzhou	0.020041**	0.002317***	–0.001313	–0.000516	0.000396	11.38**	13,930
	(1.96)	(2.87)	(–0.72)	(–0.16)	(1.70)		
Tianjin	0.029906**	–0.004968***	–0.002357*	–0.012708***	0.001512***	53.49***	16,357
	(2.49)	(–6.77)	(–1.74)	(–4.47)	(6.61)		
Wuhan	0.008563	–0.001969***	–0.003678***	–0.006745***	0.000794**	21.91***	18,352
	(1.00)	(–3.30)	(–3.14)	(–3.31)	(4.06)		
Xi'an	0.013152	–0.003568***	–0.002087	–0.005364*	0.001224***	75.31***	11,997
	(1.13)	(–7.19)	(–1.13)	(–1.72)	(7.73)		
Zhengzhou	0.006031	–0.002003	–0.002439	–0.008854	0.000804	10.208	4,152
	(0.28)	(–2.05)	(–1.31)	(–2.31)	(2.29)		

Note: This table reports the regression results of ratio of comedy moviegoers to general moviegoers on returns. R_{it} denotes the returns of listed companies headquartered at city c on day t. $Pro_{c,t-1}$ denotes the ratio of comedy moviegoers to general moviegoers on day t-1 at city c. *Tax* denotes the tax effect that equals to 1 from the first trading day to the seventh trading day of each year and equals to 0 for the other trading days. *SAD* denotes the seasonal affect disorder and *Cons* is constant. The standard errors are clustered at the firm level and the z-statistics are reported in parentheses. *, **, and *** denote significance at the 1%, 5%, and 10% levels, respectively.

Table 7. Impact of comedy moviegoers adjusted by residents on returns at the city level

	$R_{i,t-1}$	$Adjcomedy_{c,t-1}$	$Adjall_{c,t-1}$	Tax_t	SAD_t	Cons	Wald chi2	Obs
Beijing	0.024343***	−0.728645***	0.977158***	−0.002098***	−0.004890***	−0.002438***	719.96***	84,248
	(3.96)	(−8.27)	(25.45)	(−2.41)	(−2.49)	(−18.11)		
Chengdu	0.021043*	−4.391616**	7.588450***	−0.002368**	−0.001707	−0.001252***	175.74***	20,529
	(1.77)	(−2.25)	(10.945)	(−1.96)	(−0.70)	(−4.59)		
Chongqing	0.032717***	−1.150885***	1.614656***	−0.004761***	−0.004671	−0.002443***	203.85***	16,936
	(2.74)	(−4.02)	(12.40)	(−5.76)	(−2.37)	(−8.08)		
Dalian	0.032877***	−24.07777***	9.069581***	−0.00125	−0.004459**	−0.000067	120.50***	12,295
	(2.20)	(−9.27)	(9.11)	(−0.93)	(−2.07)	(−0.33)		
Fuzhou	0.023168**	−0.575265	1.840709***	−0.002221	0.001833	0.00078***	98.40***	13,787
	(2.30)	(−0.50)	(5.40)	(−1.24)	(0.60)	(3.51)		
Guangzhou	0.031780***	0.120111	1.281787 ***	−0.004450***	0.000278	−0.000205	246.96***	26,809
	(3.32)	(0.34)	(10.83)	(−4.48)	(0.16)	(−1.13)		
Hangzhou	0.030830***	−1.903123***	2.434718 ***	0.000423	−0.003344*	−0.002849***	232.09***	28,337
	(3.592)	(−6.01)	(13.78)	(0.34)	(−1.65)	(−10.45)		
Kunming	0.031935**	−2.605446**	3.488486***	−0.005901***	−0.004925	−0.002309***	88.57***	9,694
	(1.80)	(−2.24)	(8.22)	(−3.69)	(−1.33)	(−6.37)		
Nanjing	0.011559	−6.373794***	6.961905***	−0.001704*	0.001707	−0.001303***	318.39***	21,185
	(1.19)	(−4.70)	(16.25)	(−1.46)	(0.79)	(−6.92)		
	$R_{i,t-1}$	$Adjcomedy_{c,t-1}$	$Adjall_{c,t-1}$	Tax_t	SAD_t	Cons	Wald chi2	Obs
Ningbo	0.010815	−7.143746**	9.023136***	−0.004042***	−0.002017	−0.000603**	103.96***	16,926
	(1.10)	(−2.99)	(9.45)	(−4.12)	(−0.90)	(−2.99)		
Shanghai	0.034620***	−0.834630***	2.151769***	−0.004057***	−0.003323**	−0.00233***	933.20***	85,935
	(5.23)	(−4.58)	(28.79	(−8.25)	(−3.11)	(−17.25)		
Shenzhen	0.0259567***	−0.720486***	0.798935***	−0.000899	−0.001276	−0.000287*	380.25***	74,110
	(5.42)	(−4.27)	(16.45)	(−1.16)	(−1.15)	(−2.58)		
Shenyang	0.027340*	−15.20553***	9.05993***	−0.003201*	−0.002595	0.000226	58.27***	8,405
	(1.92)	(−3.64)	(5.33)	(−1.91)	(−0.81)	(0.83)		
Suzhou	0.015216	−1.655415***	2.411306***	−0.000763	0.002372	−0.000403	144.38***	14,180
	(1.44)	(−2.55)	(8.32)	(−0.41)	(0.75)	(−1.91)		
Tianjin	0.019039	−4.970534***	3.713049 ***	−0.002650*	−0.008569**	−0.001299***	217.92***	16,474
	(1.59)	(−7.73)	(13.09)	(−1.88)	(−2.84)	(−4.70)		
Wuhan	0.003518	−2.565035***	2.557282***	−0.003601***	−0.001188	−0.000031	146.00***	18,726
	(0.41)	(−4.13)	(10.99)	(−2.95)	(−0.61)	(−0.17)		
Xi'an	0.00484	−9.577601***	9.436853***	−0.001511	−0.000914	−0.002127***	193.77***	12,484
	(0.43)	(−6.34)	(13.02)	(−0.82)	(−0.28)	(−7.34)		
Zhengzhou	0.003294	−7.512323**	5.168224***	−0.004557***	−0.000171	0.000142	66.61***	8,751
	(0.22)	(−3.56)	(4.60)	(−3.54)	(−0.06)	(0.62)		

Note: This table reports the regression results of comedy moviegoers adjusted by residents on returns at the city level. *Rit* denotes the returns of listed companies headquartered at city c on day t. *Adjcomedy*$_{c,t-1}$ denotes the number of comedy moviegoers divided by the number of residents on day t-1 at city c, while *Adjall*$_{c,t-1}$ denotes the number of general moviegoers divided by the number of residents on day t-1 at city s. *Tax* denotes the tax effect that equals to 1 from the first trading day to the seventh trading day of each year and equals to 0 for the other trading days. *SAD* denotes the seasonal affect disorder and *Cons* is constant. The standard errors are clustered at the firm level and the z-statistics are reported in parentheses. *, **, and *** denote significance at the 1%, 5%, and 10% levels, respectively.

we divide the number of comedy and general moviegoers by the number of permanent residents to obtain two new investor mood variables, namely, *Adjcomedy*$_{c,t-1}$ and *Adjall*$_{c,t-1}$, which will allow us to control the impact of permanent residents on the mood of investors.

Tables 6 and 7 present the empirical results. Table 6 shows that after taking the proportion of comedy moviegoers as a proxy for investor sentiment, the proxy coefficients of 15 out of 18 cities are negative, while the coefficients of 10 cities have a significantly negative impact on local stock returns at the 10% level or above. Only

one comedy coefficient in Table 7 is positive. Except for Fuzhou and Guangzhou, after considering population size, the investor sentiment of 88.9% of the cities has a significant negative impact on local stock returns, thereby supporting the existence of a local bias. Tables 6 and 7 prove the robustness of the above mentioned empirical results. The positive mood of investors triggered by watching comedy movies will reduce the expected stock returns, thereby suggesting that MMH has a certain interpretation ability in the Chinese stock market.

We use the proportion of comedy moviegoers to regress

equally weighted stock returns, and the results are presented in Table 8. The proxies for the improved emotions of investors have a significant negative impact on the equally weighted stock returns of these cities, which is consistent with the results presented in Table 5.

Table 8. Impact of comedy dummy and comedy moviegoers on equally weighted returns based on resident population

Variables	Model I	Model II
	R_{ct}	R_{ct}
$R_{c,t-1}$	(0.018368)	0.022428
	(5.85)	−1.96
$Pro_{c,t-1}$	−0.001333**	
	(−2.81)	
$Adjcomedy_{c,t-1}$		−1.068202 ***
		(−2.83)
$Adjall_{c,t-1}$		1.060331***
		−8.86
Tax	−0.002788***	−0.002220***
	(−5.91)	(−2.72)
SAD	−0.005845***	−0.001269
	(−7.27)	(−0.51)
$Cons$	0.001083***	−0.000078
	(12.56)	(−0.36)
F statistic	100.76***	22.18***
Obs	9,456	7,908

Note: This table reports the regression results of comedy dummy and comedy moviegoers on equally weighted returns based on resident population. R_{it} denotes the equally weighted returns of listed companies at city c on day t. $Pro_{c,t-1}$ is the proportion of comedy moviegoers to general moviegoers on day t-1 at city c. $Adjcomedy_{c,t-1}$ denotes the number of comedy moviegoers divided by the number of residents on day t-1 at city c, while $Adjall_{c,t-1}$ denotes the number of general moviegoers divided by the number of residents on day t-1 at city c. *Tax* denotes the tax effect that equals to 1 from the first trading day to the seventh trading day of each year and equals to 0 for the other trading days. *SAD* denotes the seasonal affect disorder and *Cons* is constant. The standard errors are clustered at the city level and the z-statistics are reported in parentheses. *, **, and *** denote significance at the 1%, 5%, and 10% levels, respectively.

5. Conclusions

Movie clips are often used in psychological experiments as visual materials to evoke emotions and to observe the subjective experience and physiological responses of the subjects. Given that these clips are often short and carefully selected, the reactions of subjects to these materials are usually expected. Unlike the conventional methods employed in experimental psychology, we adopt real-life data to examine the impact of positive emotions on the risk decision making of people. We study the relationship between the number of comedy moviegoers from 18 cities in China and the returns of locally headquartered listed companies.

The dummies of comedy movie screening and comedy moviegoers reveal that the stock returns of locally

headquartered listed companies are reduced in the next day. Our study further confirms the impact of emotions on asset pricing. Although watching a movie is not directly linked to equity investments, the emotions triggered by these movies can affect the judgments and actions related to risk investment. These results also support MMH, that is, investors avoid risky investment behavior to maintain a positive emotional state. Our study also lends empirical support to the existence of home bias in a domestic capital market, that is, investors prefer to purchase stocks from local listed companies after controlling for the effects of cross-border investment restrictions, differences in risk-free rate of returns, and accounting systems.

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