Trading Volumes, Security Prices, and Investor Attention: Evidence from Chinese ADRs

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Focusing on a sample of Chinese ADRs traded in the US stock markets between 2004 and 2014, this study examines the relationship between investor attention, trading volumes, and security prices on a two-week investment horizon. This study shows evidence that higher search intensity is associated with higher trading volume. Also, this study detects abnormal stock returns following surges in investor attention. The positive association between investor attention and stock prices is stronger among stocks that are mostly held / traded by individual investors. However, the positive abnormal return would disappear or even reverse quickly after day zero.

INTRODUCTION

Based on the assumptions of incomplete information and bounded rationality, numerous studies in the field of behavioral finance use changes in investor attention to explain irrational investor behaviors and some price abnormalities documented in the stock markets (Barber and Odean 2013; Hershleifer et al. 2011; Aouadi et al. 2013; Wang 2017;Yung and Nafar 2017). Meanwhile, investors' online activities have increasingly attracted researchers' attention in the studies of investor sentiment and how a change in investor recognition affects investment decisions (Rubin and Rubin 2010; Ackert et al. 2016; Tantaopas et al. 2016). Specifically, Investors' online search activities largely reflect changes in investor attention. The purpose of this article is to investigate the impact of a change in investor attention, measured by Google search intensity, on trading volumes and security prices. This study focuses on Chinese American depositary receipts (ADRs) traded in the US markets.

A sudden change of public attention may temporally affect both trading volumes and stock prices. This research is mainly built upon the "price pressure hypothesis" or "attention theory" proposed by Barber and Odean (2008). When facing the "forbidden" task of choosing from thousands of stocks with different levels of potential performance, they argue, investors with bounded rationality and limited attention tend to "limit their search to stocks that have recently caught their attention (p.786)". In this process, the benefits of acquiring information are relatively high. However, when individual investors sell stocks, they typically only sell what they own and focus on past returns, which are readily available via various sources. As a result, the cost-benefit comparison associated with ticker searches will favor buying over selling. Individual investors are net buyers of "attention-grabbing" stocks and an increase in investor

attention should increase trading volumes and generate positive price pressure temporarily. Also, such surge in investor attention does not have to be associated with the dissemination of new or genuine information about firm fundamentals. Da et al. (2011) further predict that attention-induced price pressure is stronger among stocks in which individual investor attention matters the most.

Da et al. (2011), which is one of the first studies that use Google search intensity as a measure of investor attention, show that indirect indicators of investor attention, such as size of stock, abnormal turnover, extreme stock returns, news coverage, and advertising expense, can only explain a small fraction of the variation in the Google measure. They further provide direct empirical evidence to show that their Google search intensity measure mainly captures the attention of retail investors.

Follow-up studies consistently find positive linkages between Google search intensity and stock returns/trading volume, which, again, lends support to the "price pressure hypothesis" or "attention theory" proposed by Barber and Odean (2008). More specifically, Joseph et al. (2011) confirm the findings documented in Da et al. (2011) based on their sample of S&P 500 stocks between 2005 and 2008 on a weekly investment horizon. They also show that the more difficult a stock is to arbitrage, the more positive the correlation is between the stock's return and search intensity. In addition, the positive correlation experiences a gradual reversal when the investment horizon extends beyond 5 weeks, which again suggests that higher search intensity is associated with negative long-term returns. Vlastakis and Markellos (2012), on the other hand, measure investor attention based on Google search intensity of company names. They report a positive relationship between investor attention and stock trading volume/volatility for 30 major stocks traded in NYSE and NASDAQ.

Additional evidence is generated by studies using international data. Bank et al. (2011) find that increased search intensity on Google is associated with a rise in stock liquidity, stock trading volume, and temporarily higher future returns in German stock market. They attribute the improved liquidity to a reduction in asymmetric information costs. Takeda and Wakao (2014) focus on 189 Japanese stocks traded between 2008 and 2011. They find a strong relationship between Google search intensity of company names and trading volume. But the link between investor attention and stock price is not clear.

Almost all the above-mentioned studies indicate that the positive relationship between search intensity and trading volume/abnormal return largely applies to uninformed and less sophisticated retail investors. The authors conjecture that such relationship should also hold (or even be more significant) for foreign stocks that traded in a particular country because domestic investors, including both institutional and individual investors, are generally less knowledgeable about foreign stocks. This study therefore will focus on Chinese stocks traded on the US markets through ADRs.

This study takes a close look at the relationship between the surge in investor attention and security prices within a two-week investment horizon. In other words, how would security prices and trading volumes respond to a surge in investor attention "over time" within 10 trading days? In this paper, investor attention is related to but different from the term "investor recognition" used in previous literature (e.g., Merton1987). "Investor attention" is broadly defined as market participants' attention paid to a specific stock. A sudden surge in investor attention towards a stock may or may not lead to immediate dissemination of new or genuine information about firm fundamentals, but it may lead to an over-reaction among some investors. On the other hand, the authors consider "investor recognition" as the formation of investors' understanding of a firm's future cash flows and investment risks based on the information at hand.

This study tests four hypotheses. First, the authors expect to find a positive link between a surge in investor attention and trading volume (H1) as predicted by Barber and Odean (2008). Second, the authors hypothesize that upon the surge in investor attention, stock prices tend to experience temporary but immediate increases due to the pressure on the buyers' side (H2). However, stocks that experienced temporary over-valuation tend to experience a reversal in their prices within a period of time afterward (H3). On one hand, higher level of investor attention may quickly lead to better information dissemination. As additional information becomes available about the firm, stock prices are more likely to move back to their fundamental values due to improved "investor recognition' and thus lower estimation risk. On the other hand, higher level of investor attention typically leads to larger investor base, which

may lower the required rate of return through higher liquidity and lower firm-specific risk associated to higher level of diversification. Therefore, the authors expect to find a positive and significant association between the search intensity variable and stock price on the same trading day, but such effect would disappear or even reverse after initial trading days. Finally, we test the hypothesis that the positive link between investor attention and short-term stock over-valuation is stronger for stocks mostly owned by individual investors (H4).

The empirical tests are conducted on a sample of Chinese ADRs traded in the US stock markets from 2004 to 2014. The authors conjecture that foreign stocks are typically stocks with poor information dissemination and lower investor recognition. Such stocks are more vulnerable to the behavioral biases of "noise" traders and/or less sophisticated individual traders. Therefore, the authors expect the "investor attention effects" to be particularly strong and relevant among these stocks.

This paper is different from existing empirical studies in three major aspects. First, conceptually, this article differentiates between investor attention and investor recognition and focus on the short-term impact of the surge in investor attention on security returns. In addition to the traditional abnormal search volume index (ASVI) variable used to measure the level of investor attention, this study also defines a dummy variable "ABSVI" to better capture the sudden increase of Google search intensity associated with a ticker symbol. Second, the authors pay attention to the time dimension of the relationship. Specifically, this research examines how security prices respond to a surge in investor attention immediately (on the same trading day) and shortly afterwards within two weeks (i.e., 10 trading days) by including 10 lagged investor attention variables. Various studies have detected the positive relationship between investor attention and stock prices. However, none of the previous papers following Da et al. (2011) has looked at the day-to-day impact of the surge in investor attention. This study is also different by focusing on the lingering effect of the initial change in investor attention on stock returns over a two-week investment period. Third, this study conducts the empirical analysis based on a unique sample of Chinese ADRs traded on US stock exchanges. As previously discussed, ADRs are particularly suitable for this analysis because of relatively poor information dissemination and lower investor recognition. But ADRs were generally excluded in previous empirical studies (e.g., Da et.al 2011).

The rest of the paper is organized as follows. Section 2 presents data sources and the construction of the key variable that measures the surge in investor attention. Section 3 lays out model specifications and presents the empirical results. Section 4 discusses the results and concludes.

INVESTOR ATTENTION AND DATA SOURCES

This study uses the aggregate search volume of stock symbols in Google to proxy investor attention. Google prepares the Search Volume Index (SVI) of a keyword in the manner that the SVIs are scaled from 0 to 100 based on the search volume statistics during the specified retrieval period. For example, if you retrieve the SVIs for the keyword "AMZN" for the period between March 1 and March 31 of 2014 and the highest search volume for "AMZN" occurred on March 4, 2014, Google will assign 100 as the SVI value for March 4, and the rest SVI values will be calculated as their raw search volume values relative to the raw search volume of March 4, 2014. The scaled data provided by Google accounts for the natural temporal variation. Since this research focuses on the short-term impact of a surge of investor attention, this study uses daily SVIs instead of the weekly SVIs employed by previous studies.

Google prepares daily SVI data downloadable in relatively short intervals, for example, up to 90 days at a time. For SVIs downloaded from different retrieval periods, the scaling is inconsistent. To resolve this issue, the authors combine daily SVIs files of a stock symbol in monthly intervals with weekly SVIs of that symbol, which can be retrieved for the whole period of 2004 – 2014 with a single download. The authors then match daily SVIs with corresponding weekly SVIs and re-scale the daily SVIs[1].

When testing the relationship among investor attention, trading volume, and stock return, stock activities on Monday may be affected by a change in investor attention during the previous weekend. So, the investor attention variable used in the regression analysis is the maximum SVI detected on Monday of current week as well as on Saturday and Sunday of previous week. The logic behind such an adjustment

is that investor attention paid, and information disseminated during a weekend will not be formally incorporated into stock activities until trading opens on the following Monday. Thus, stock activities on Monday should be related to the SVI value on Monday as well as the values on Saturday and Sunday of the previous week.

To identify the surge in investor attention, this study constructs the ASVI as follows:

$$ASVI_{i,t} = log(SVI_{i,t}) - log[Med(SVI_{i,t-1}, \dots, SVI_{t,t-5})] \quad (1)$$

Where, $log(SVI_{i,t})$ is the logarithm of SVI on day t and $log[Med(SVI_{i,t-1}, \dots, SVI_{t,t-5})]$ is the logarithm of the median SVI for the previous five trading days, which represents the "normal" level of search intensity. This research also defines a dummy variable$ABSVI_{i,t}$. $ABSVI_{i,t}$= 1 if $log(SVI_{i,t})$ is more than one standard deviation higher than $log[Med(SVI_{i,t-1}, \dots, SVI_{t,t-5})]$; otherwise, $ABSVI_{i,t}$= 0.

The sample in this study originally contains 102 Chinese ADRs that are traded on the US stock exchanges (as of September of 2016, according to www.zacks.com). Since some tickers have other meanings that are not necessarily related to attention paid to the associated stocks, the following nine "noisy" tickers: BORN, CEO, MR, MY, NOAH, DATE, GAME, JOBS, and LONG are removed from the sample.

To provide meaningful analysis, the authors dropped 41 stocks that don't have complete SVI values during the whole research period. This study covers the 11-year period from 2004 to 2014, as the Google site only provides data on search intensity for any keyword from January 2004 onwards. Stock return and trading volume data is retrieved from CRSP. Accounting information is obtained from Standard and Poor's COMPUSTAT. Institutional ownership data is retrieved from Yahoo! Finance.

TABLE 1
DESCRIPTIVE STATISTICS

Panel A: Full sample

Variables	# of Firms	Mean	Std. Dev.	Median	Minimum	Maximum
Price ($)	102	21.88	32.88	10.23	0.74	230.01
Daily trading volume (thousands of shares)	102	670.28	1,447.75	248.58	2.65	10,205.75
Market capitalization (millions of dollars)	102	1,800.57	7,412.23	178.35	1.87	63,700.00
Institutional ownership (%)	97	25.94%	26.85%	13.80%	0.03%	98.00%

Panel B: Restricted sample

Variables	# of Firms	Mean	Std. Dev.	Median	Minimum	Maximum
Price ($)	52	24.58	40.96	8.81	0.74	230.01
Daily trading volume (thousands of shares)	52	942.65	1,995.86	239.27	2.65	10,205.75
Market capitalization (millions of dollars)	52	3,289.19	10,800.00	195.37	1.87	63,700.00
Institutional ownership (%)	52	22.54%	24.70%	12.60%	0.56%	90.40%

Table 1 summarizes the descriptive statistics of the samples. Stock price, daily trading volume, market capitalization, and institutional ownership data reflect firms' values on December 31, 2014. The restricted sample is a subset of the full sample containing firms with daily Google SVI data available

during the whole period of 2004 to 2014. Panel A reports descriptive statistics for the 102 firms included in the full sample. Panel B presents descriptive statistics for the 52 firms included in the restricted sample.

MODEL SPECIFICATIONS AND EMPIRICAL RESULTS

Investor Attention and Short-term Stock Return

To examine the relationship between investor attention and stock return, this study uses a panel data regression analysis to verify whether investor attention (IA) variable, i.e., ASVI or ABSVI, improves the Fama-French three-factor model (Fama and French 1993) on a same day investment horizon. The Fama-French model with the IA variable included as an additional explanatory variable is as follows:

$$R_{i,t} - R_{f,t} = \alpha + \beta_{IA} IA_{i,t} + \beta_m (R_{m,t} - R_{f,t}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \varepsilon_{i,t} \quad (2)$$

where,$\alpha$is the abnormal return (in percentage terms) over a certain period, $IA_{i,t}$ is the investor attention measured by $ASVI_{i,t}$ in Model 1 and $ABSVI_{i,t}$ in Model 2, R_{mt} - R_{ft} is the market risk premium, which is the difference between market rate of return and risk-free rate of return, SMB_t is the small market capitalization minus big, which is the historic excess returns of small caps over big caps, HML_t is the high book-to-market ratio minus low, which is the historic excess returns of value stocks over growth stocks.

TABLE 2
RETURN ANALYSIS BASED ON FAMA-FRENCH THREE-FACTOR MODEL

	Model 1			Model 2		
Explanatory variables	Est. Coef.	SE	*p*-value	Est. Coef.	SE	*p*-value
$ASVI_{i,t}$	-0.003	0.021	0.896			
$ABSVI_{i,t}$				0.109	0.039	0.006***
R_{mt}-R_{ft}	1.162	0.015	0.000***	1.165	0.015	0.000***
SMB_t	0.210	0.030	0.000***	0.210	0.030	0.000***
HML_t	-0.064	0.032	0.041**	-0.062	0.032	0.048**
Intercept	0.004	0.036	0.903	-0.015	0.066	0.824
Obs.	58,227			58,452		
# of stocks	52			52		
$\chi^2(4)$	8,165.72***			8,191.79***		

Random effects models are used to explain variations in the same-day stock returns of Chinese ADRs[2].Table 2 reports the estimated results of Equations (2). For the risk factors in the equation, Model 1 and Model 2 generate consistent results: market risk premium and SMB have positive impact on stock return and HML has negative impact. However, the coefficient of ASVI is statistically insignificant in Model 1, while the coefficient of ABSVI is statistically significant and positive at the 1% level in Model 2. These results suggest that ABSVI does a better job than ASVI in explaining the variation of stock return associated with investor attention. It is consistent with the prediction by price pressure hypothesis that a surge in investor attention is positively related to stock return on a short-term basis.

Investor Attention and Trading Volume

The authors then analyze the effects of investor attention on trading volume. The trading volume of stock *i* at time *t*, $TV_{i,t}$, is defined as $TV_{i,t} = P_{i,t} V_{i,t}$, where $P_{i,t}$ is the price of stock *i* at time *t* and $V_{i,t}$ is the share volume traded at time *t*. The abnormal trading volume, $ATV_{i,t}$, is calculated as $ATV_{it} = \frac{TV_{i,t} - TV_{i,avg}}{TV_{i,avg}}$, where, $TV_{i,avg}$ is the monthly average trading volume of the stock *i*.

To determine whether trading volume is affected by investor attention, as predicted by the price pressure hypothesis, the authors develop a regression analysis model with the IA variable, i.e., $ASVI_{i,t}$ or $ABSVI_{i,t}$, included alternately.

$$ATV_{i,t} = \beta_0 + \beta_{IA} IA_{i,t} + \beta_1 \frac{\sum_{i=1}^{N} ATV_{i,t}}{N} + \varepsilon_{i,t} \quad (3)$$

where, $IA_{i,t}$ is investor attention measured by $ASVI_{i,t}$ in Model 1 and $ABSVI_{i,t}$ in Model 2, $\frac{\sum_{i=1}^{N} ATV_{i,t}}{N}$is the market trading condition proxy variable at time *t*.

TABLE 3
INVESTOR ATTENTION AND ABNORMAL TRADING VOLUME

	Model 1			Model 2		
Explanatory variables	Est. Coef.	SE	*p*-value	Est. Coef.	SE	*p*-value
$ASVI_{i,t}$	0.011	0.004	0.007***			
$ABSVI_{i,t}$				0.015	0.007	0.049**
$\Sigma ATV_{it}/N$	0.981	0.014	0.000***	1.000	0.014	0.000***
Intercept	-0.002	0.003	0.459	-0.003	0.004	0.341
Obs.	58,231			58,482		
# of stocks	52			52		
$\chi^2(4)$	4,901.67***			5,002.17***		

Table 3 reports the estimated results of Equation (3). For both models, the coefficients of ASVI and ABSVI are statistically significant and positive at the 5% confidence level. These results lend support to the findings in previous studies that higher search intensity is associated with higher trading volume.

The Lingering Effect of Investor Attention

One of the main focuses of this research is to examine the lingering effect of a sudden change in investor attention on stock returns. The "attention theory" suggests a positive impact in the short run. However, such effect would disappear in the long run due to improved investor recognition and lower estimation risk. To examine how the impact of investor attention on stock return would evolve, the authors add 10 lagged IA variables in Equations (2) as follows:

$$R_{i,t} - R_{f,t} = \alpha + \beta_{IA} IA_{i,t} + \sum_{s=t-1}^{t-10} \beta_s IA_{i,s} + \beta_m \left(R_{m,t} - R_{f,t}\right) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \varepsilon_{i,t} \quad (4)$$

Table 4 reports the estimated results of Equation (4). Panel A provides results with 10 daily lagged IA variables included and Panel B with aggregated lagged IA variables. In both panels, Model 1 contains the continuous IA variable $ASVI_{i,t}$ and Model 2 includes the dummy variable $ABSVI_{i,t}$. $ASVI_{i,t-1}$*(*$ABSVI_{i,t-1}$*)*, ... , $ASVI_{i,t-10}$ *(*$ABSVI_{i,t-10}$*)* are the ten lagged IA variables included in Model 1 (Model 2). $ASVI_{i,ts}$ *(*$ABSVI_{i,ts}$*)* is the aggregated value for *ASVI (ABSVI)* at *t-1*, *t-2*, and *t-3*. $ASVI_{i,tm}$ *(*$ABSVI_{i,tm}$*)* is the aggregated value for *ASVI (ABSVI)* at *t-4*, *t-5*, and *t-6*. $ASVI_{i,tl}$ *(*$ABSVI_{i,tl}$*)* is the aggregated value for *ASVI (ABSVI)* at *t-7*, *t-8*, *t-9* and *t-10*.

As illustrated in Table 4, the coefficient for ASVI in Model 1 is not statistically significant, while the coefficient for *ABSVI* in Model 2 remains statistically significant and positive at the 1% level. On the daily basis, however, the signs of the coefficients of lagged investor attention variables are mostly statistically insignificant with two exceptions in Model 2: the coefficient for the 5-day lagged *ABSVI* is statistically significant negative and that for the 7-day lagged *ABSVI* is positive. All the coefficients of the aggregated lagged IA variables are statistically insignificant in both models. The results confirm the previous finding of positive abnormal return on the day when there is a surge in investor attention. The results also suggest a delayed reversal effect, 5 trading days after the initial surge in investor attention.

TABLE 4
THE LINGERING EFFECT OF INVESTOR ATTENTION ON STOCK RETURN

	Model 1			Model 2		
Explanatory variables	Est. Coef.	SE	p-value	Est. Coef.	SE	p-value
Panel A: Daily lagged investor attention and stock returns based on the Fama-French model						
$ASVI_{i,t}$	0.016	0.030	0.896			
$ASVI_{i,t-1}$	-0.079	0.036	0.027**			
$ASVI_{i,t-2}$	0.087	0.035	0.014**			
$ASVI_{i,t-3}$	-0.070	0.038	0.067*			
$ASVI_{i,t-4}$	0.011	0.038	0.775			
$ASVI_{i,t-5}$	-0.041	0.038	0.278			
$ASVI_{i,t-6}$	-0.047	0.038	0.217			
$ASVI_{i,t-7}$	0.127	0.038	0.001***			
$ASVI_{i,t-8}$	-0.059	0.035	0.091*			
$ASVI_{i,t-9}$	-0.001	0.035	0.982			
$ASVI_{i,t-10}$	0.002	0.029	0.944			
$ABSVI_{i,t}$				0.130	0.041	0.001***
$ABSVI_{i,t-1}$				-0.061	0.041	0.144
$ABSVI_{i,t-2}$				-0.029	0.041	0.485
$ABSVI_{i,t-3}$				0.013	0.042	0.754
$ABSVI_{i,t-4}$				-0.003	0.042	0.948
$ABSVI_{i,t-5}$				-0.094	0.042	0.025**
$ABSVI_{i,t-6}$				0.002	0.042	0.958
$ABSVI_{i,t-7}$				0.122	0.042	0.004***
$ABSVI_{i,t-8}$				-0.037	0.042	0.381
$ABSVI_{i,t-9}$				0.003	0.042	0.934
$ABSVI_{i,t-10}$				-0.013	0.041	0.750
R_{mt}-R_{ft}	1.159	0.015	0.000***	1.160	0.015	0.000***
SMB_t	0.212	0.030	0.000***	0.215	0.030	0.000***
HML_t	-0.060	0.032	0.060*	-0.059	0.032	0.062*
Intercept	0.002	0.017	0.918	-0.005	0.036	0.883
Obs.	57,731			57,972		
# of stocks	51			52		
$\chi^2(14)$	8,108.26***			8,141.13***		
Panel B: Aggregated lagged investor attention and stock returns based on the Fama-French model						
$ASVI_{i,t}$	0.003	0.024	0.911			
$ASVI_{i,ts}$	-0.011	0.009	0.235			
$ASVI_{i,tm}$	-0.013	0.009	0.161			
$ASVI_{i,tl}$	0.007	0.008	0.365			
$ABSVI_{i,t}$				0.109	0.040	0.006***
$ABSVI_{i,ts}$				-0.024	0.020	0.234
$ABSVI_{i,tm}$				-0.024	0.020	0.228
$ABSVI_{i,tl}$				0.016	0.018	0.377
R_{mt}-R_{ft}	1.158	0.015	0.000***	1.160	0.015	0.000***
SMB_t	0.212	0.030	0.000***	0.214	0.030	0.000***
HML_t	-0.057	0.032	0.069*	-0.058	0.032	0.065*
Intercept	0.002	0.017	0.907	-0.003	0.036	0.931
Obs.	57,731			57,972		
# of stocks	51			52		
$\chi^2(7)$	8,081.60***			8,127.32***		

The Effect of Investor Type

Finally, the study investigates whether the type of investors affects the impact of investor attention on stock return. As predicted by Barber and Odean (2008), individual investors are net buyers of attention-

grabbing stocks and a higher level of investor attention should generate upward price pressure on stocks mostly owned by individual investors. The authors divide the sample into two sub-samples of equal size based on the level of institutional ownership. To control the firm size factor, a controlling variable, the logarithm of market capitalization MC, is added in Equation (2) to construct a regression model as follows:

$$\boldsymbol{R_{i,t} - R_{f,t} = \alpha + \beta_{IA} IA_{i,t} + \beta_m (R_{m,t} - R_{f,t}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \beta_{MC} MC + \varepsilon_{i,t}} \qquad (5)$$

The estimated results of Equation (5) are reported in Table 5. Panel A provides the results for the full restricted sample and Panels B and C show results for firms with different levels of institutional ownership.

TABLE 5
INVESTOR TYPE AND THE IMPACT OF INVESTOR ATTENTION ON STOCK RETURN

	Model 1			Model 2		
Explanatory variables	Est. Coef.	SE	p-value	Est. Coef.	SE	p-value
Panel A: Investor attention and stock return based on the adjusted Fama-French model						
$ASVI_{i,t}$	-0.003	0.021	0.868			
$ABSVI_{i,t}$				0.104	0.039	0.000***
R_{mt}-R_{ft}	1.167	0.015	0.000***	1.169	0.015	0.000***
SMB_t	0.213	0.030	0.000***	0.213	0.030	0.000***
HML_t	-0.070	0.031	0.025**	-0.068	0.031	0.030**
$MC_{i,t}$	0.076	0.018	0.000***	0.128	0.024	0.000***
Intercept	-0.934	0.220	0.000***	-1.594	0.304	0.000***
Obs.	57,911			58,136		
# of stocks	52			52		
$\chi^2(5)$	8,283.280***			8,318.910***		
Panel B: Investor attention and stock return for firms with higher institutional ownership						
$ASVI_{i,t}$	-0.006	0.034	0.857			
$ABSVI_{i,t}$				0.046	0.064	0.475
R_{mt}-R_{ft}	1.312	0.025	0.000***	1.317	0.025	0.000***
SMB_t	0.417	0.049	0.000***	0.413	0.049	0.000***
HML_t	-0.105	0.053	0.047**	-0.097	0.053	0.067*
$MC_{i,t}$	0.060	0.015	0.000***	0.106	0.033	0.001***
Intercept	-0.768	0.189	0.000***	-1.337	0.440	0.002***
Obs.	22,841			22,950		
# of stocks	26			26		
$\chi^2(5)$	3,882.74***			3,904.65***		
Panel C: Investor attention and stock return for firms with lower institutional ownership						
$ASVI_{i,t}$	-0.005	0.026	0.863			
$ABSVI_{i,t}$				0.141	0.050	0.004***
R_{mt}-R_{ft}	1.077	0.018	0.000***	1.078	0.018	0.000***
SMB_t	0.081	0.037	0.028**	0.084	0.037	0.023**
HML_t	-0.038	0.039	0.331	-0.039	0.039	0.315
$MC_{i,t}$	0.013	0.013	0.299	0.014	0.013	0.271
Intercept	-0.162	0.157	0.303	-0.204	0.157	0.194
Obs.	35,070			35,186		
# of stocks	26			26		
$\chi^2(5)$	4,489.52***			4,488.87***		

On Panel B, the coefficient for the IA variable *ABSVI* is statistically insignificant for the Chinese ADRs with higher institutional ownership (or fewer individual investors); however, the coefficient of *ABSVI* for ADRs with lower level of institutional ownership (i.e., more individual investors), reported on Panel B, is statistically significantly positive. The estimated coefficient value of *ABSVI* for firms with more individual investors, 0.141, is much higher than that for firms with fewer individual investors, 0.046. The results are consistent with the hypothesis that investor attention tends to put more price pressure on stocks mostly traded by individual investors.

CONCLUSIONS

Following the theoretical work of Barber and Odean (2008) and the emprical study of Da et al. (2011), the authors examine the relationship among investor attention, trading volumes, and security prices within a two-week investment period. In addition to the traditional SVI obtained from Google Trend, the authors construct a dummy variable *ABSVI* as an indicator of a surge in investor attention. In models with or without lagged investor attention variables, the authors find immediate (i.e., same-day) increases in trading volumes and positive abnormal returns for Chinese ADRs that experience a surge in investor attention. The positive association between investor attention and stock prices is stronger among ADRs that are mostly held / traded by individual investors. But interestingly, the positive abnormal returns quickly disappear after day zero.

The results provide further evidence to the "attention theory" (Barber and Odean 2008), which predicts the temporary price increase and eventual reversal associated with a higher level of investor attention. But compared to existing empirical literature, this study focuses on a shorter investment horizon and detects the quick disappearance of the same-day abnormal returns. The study obtains the distinct results probably because of the unique sample the authors use for this analysis. As indicated previously, foreign stocks traded in the US markets are typically associated with poorer information dissemination and lower investor recognition. Therefore, the "marginal" benefit of investor attention is more distinctive for these stocks. As investors collect more information about the "foreign" firms due to a surge of attention, they may quickly adjust their expectation about the stocks after the initial over-reaction.

ENDNOTES

1. The authors use the following steps to match and re-index the daily SVIs: 1) first calculate the average SVI value of the week based on daily SVI values, i.e., WAVG; 2) calculate the adjusted daily SVI values by using the formula: $\frac{Daily\ SVI}{WAVG} \times (Matched\ Weekly\ SVI)$.
2. Before estimating Equations (2) and (3), the authors run a Hausman test to determine the specifications of the models. The results of the test for both equations indicate the existence of random effects.

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