

# An Analysis of the Impacts of Interaction using Social Media Platforms on Stock Liquidity

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**Abstract.** Social media platforms have developed into a way for more and more investors to interact with each other, and investors are interacting more and more frequently on social media platforms. The study looked at the association between the number of forum posts in the Oriental Wealth stock bar as a measure of social media interaction and stock liquidity as a measure of turnover rate is examined through a panel fixed-effects model, and the analysis results suggest that the number of bar posts has a significant positive effect on stock turnover rate, which indicates that the interaction on social media platforms affects the liquidity of stocks, and the more frequent the interaction is, the higher the liquidity of stocks is. This study provides empirical evidence for the field of investors' social media interactions and stock liquidity, while individual stock companies and regulators should also pay attention to investors' interactions on social media platforms, and do a good job of communicating with investors in a healthy way to avoid abnormal fluctuations in the stock market.

**Keywords:** Stocks; social media; stock liquidity.

## 1. Introduction

With the growth of the Internet, the Internet has entered the Web 2.0 era, and more and more people are exchanging and communicating on top of social media. The stock market also combines with the Internet to form a variety of stock information as well as stock forums, which strengthens the information interaction between investors, this interaction increases the information exchange between individual investors and improves the information acquisition and stock interpretation between individual investors. In the traditional stock market, stock information prediction is mostly based on structured data such as historical data, financial indicators, etc. However, the complexity and uncertainty of today's financial markets have made investors increasingly dependent on various sources of information on the Internet to make rational investment decisions. Does investor interaction on social media have an impact on stock liquidity? This paper uses text data from the Oriental Wealth Stock Bar forum, the most influential stock forum to explore the Chinese stock market question in this paper. As an online community, stock bar forums play an important role in connecting investors, exchanging market views, and sharing information. In this Internet era, investors use these platforms to share their views on the future trend of stocks, including predictions of uptrends and downtrends to make buy and sell decisions accordingly. The purpose of this research is to investigate the potential impact of social media platform interactions on stock liquidity by exploring how investor sentiment towards the market affects stock liquidity through the number of stock bar posts with different viewpoints. Through the analysis in this paper can better understand the potential impact of investor sentiment on market behavior and provide investors with more comprehensive information to help them make more informed investment decisions. This research is expected to provide investors with new perspectives, prompting deeper thinking and sharper insights into the market.

## 2. Literature Review

Social media, including online news, microblogs, and forums, are guiding and receiving more and more attention as a result of the social network's rapid expansion [1]. It also offers a fresh channel for interaction and exchange among investors. An increasing amount of study is being done using data

from social media platforms to gauge what investors are concerned about and then investigate how they relate to the stock market.

## **2.1. Impact of Social Media Platforms on Stock Markets**

It has been found that stocks with news headlines seldom experience short-term stock price reversals, yet the opposite is true for stocks without news headlines [2]. It has also been found that there is a positive correlation between investors' optimism and pessimism index on stocks in social media and stock market index returns and turnover [3]. Aouadi et al. researched depending on the amount of investor searches on Google and found that investor attention and stock turnover are highly correlated [4]. According to Da et al., a surge in investor attention can temporarily raise stock prices [5]. They measured investor attention using Google search frequency. While Shi Yong and Tang Jing et al. found that The Chinese stock market experiences varying effects from investor attention and emotion derived from various social media platforms, and the impact of investors from stock bar forums and snowball network investors in the stock market surpasses that of investors who follow the news [6]. Xu Tianyang found that social media investors affect the yield and return of the stock market, and the impact on the return is longer than 10 periods [7].

In summary, there have been many scholars have studied that social media platforms directly or indirectly affect all aspects of the stock market, people communicate through social media platforms to make decisions about stocks.

## **2.2. The Effect of Stock Market Sentiment on Investor Sentiment**

Within the stock market, investors also have different emotions about stocks and have bullish, bearish, and neutral views about stock prices. In recent years, research on the relationship between investor emotion and the stock market has also gained popularity. It has been shown early on that investor sentiment does have an impact on the returns of individual stocks or markets, and Meijin Wang and Jianjun Sun found that the attitude of investors significantly affects the outcomes of the stock markets on the Shanghai and Shenzhen exchanges [8]. Wu Yanran and Han Liyan discovered that the mood of investors has a long-term negative impact and a short-term positive impact on market returns [9]. Das and Chen constructed an investor sentiment index based on Yahoo stock bar data and found that investor sentiment correlates with stock market activity [10]. Yi Hongbo et al. found that investor sentiment in stock bars affects stock turnover and returns based on stock bar data from Oriental Wealth Network [11]. Hua Guiru, Liu Zhiyuan et al. put the rationality of investors and corporate managers into the same framework and found that investor sentiment affects corporate investment behavior [12].

In summary, in the financial market, investors are increasingly relying on online communities such as stock forums to obtain information about the stock market to make more informed investment decisions. Scholars have investigated the existence of a certain impact of investor attention and investor sentiment impact the stock market, yet the majority of recent research is still predicated on conventional indicators, and there are very few studies exploring their impact on stock liquidity based on Internet social media interaction indicators.

## **3. Design of Research**

### **3.1. Research Hypothesis**

The large number of bullish and bearish posts emerging on stock bars provides a unique opportunity for researchers to investigate the possible effects on stock liquidity of these emotion expressions. This study investigates the intricate connection between the quantity of bullish and bearish posts on stock forums and stock liquidity by using the number of different types of daily posts on stock forums as a measure of social media interaction and the daily turnover rate as a measure of stock liquidity.

Therefore, this study proposes Hypothesis H1: Social media platform interactions will have a positive impact on stock liquidity.

### 3.2. Data from Sample Selection

Oriental Fortune stock bar is the largest stock social platform in China, the data of the stock bar forum and stock turnover rate utilized in this work are from the CSMAR database from Cathay Pacific. A-share listed businesses' stock samples are chosen as the study subject and the following treatments are made: (1) Excluding the stocks with abnormal financial data, such as ST and \*ST, etc. (2) Due to the specificity of financial statements of financial and real estate companies. Finance insurance, and real estate industry stocks were excluded, and finally, 4744 stock samples were obtained. The reference time is 1 month and the time interval is from 1 November 2023 to 30 November 2023. The effective number of days is obtained as 22 days because every weekend is a stock stop day, so every Saturday and Sunday are excluded. The main part of this study is to use Excel and Stata 15.0 software systems to collate the sample data results and data analysis.

### 3.3. The Meaning of Variables

#### 3.3.1 Explained variables

Stock Liquidity. Liquidity is generally defined as the cost to be paid when trading assets quickly, the smaller the cost, the better the liquidity. Given data availability and concerning the study of Mi Zengyu and Lin Yating, this paper uses the average daily turnover rate (hsl) as a measure of stock liquidity[13]. Better stock liquidity is indicated by an indicator's bigger value.

#### 3.3.2 Explanatory variables

Social media user interaction index, this paper uses the number three types of bullish, bearish, and neutral posts in the Oriental Fortune stock bar to measure the interaction index of different types of social media platforms. Where bullish posts are denoted by kz, bearish posts are denoted by kd, and neutral posts are denoted by zl.

#### 3.3.3 Control variables

- 1 Average daily return (syl), expressed as the stock's return for the day
- 2 Stock size (zsz), expressed as the stock's total daily market capitalization

### 3.4. Regression Model

To verify whether social media interactions increase the liquidity of stocks, The following regression model (1) is created in this paper to assess the hypotheses using the number of bullish, bearish, and neutral posts in stock bars as explanatory variables, the daily turnover rate of stocks as explanatory variables, and the daily return of stocks and stock size as control variables:

$$hsl = \beta_0 + \beta_1 \times kz + \beta_2 \times kd + \beta_3 \times zl + \beta_4 \times \text{control variables} + \epsilon \quad (1)$$

## 4. Empirical Results and Analyses

### 4.1. Analysis of Descriptive Statistics

**Table 1.** Summary statistics

|     | N      | Mean   | Std. Dev. | min    | max    |
|-----|--------|--------|-----------|--------|--------|
| hsl | 104241 | .02    | 0.031     | 0      | .541   |
| kd  | 104241 | 1.095  | 6.052     | 0      | 455    |
| kz  | 104241 | .972   | 6.194     | 0      | 423    |
| zl  | 104241 | .63    | 4.851     | 0      | 467    |
| syl | 104241 | .002   | 0.023     | -.298  | .201   |
| zsz | 104241 | 22.673 | 0.960     | 20.942 | 28.454 |

The outcomes of the variables' descriptive statistical analysis are displayed in Table 1. According to Table 1, the average stock turnover rate is 2%, the highest value is 54.1%, and the lowest value is 0%. This suggests that there are significant differences in the liquidity of particular stocks across different organizations. The number of bullish posts has a mean value of 1.095, a minimum value of 0, and a maximum value of 455. The number of postings that are negative has a mean value of 0.972, a minimum value of 0, and a maximum value of 423. The number of neutral postings has a mean value of 0.63 and a minimum value of 0, and the highest number is 467, indicating that the variations in the various post kinds are more important between various businesses. The daily return on individual stocks has a mean of 0.002, a minimum of -0.298%, and a maximum of 0.201%. After calculating the logarithmic value, the average market capitalization is around 22.673; the lowest number is 20.942, and the highest value is 28.454.

#### 4.2. Analysis of Correlation

**Table 2.** Correlation analysis

|     | (1)       | (2)      | (3)      | (4)      | (5)       | (6)   |
|-----|-----------|----------|----------|----------|-----------|-------|
|     | hsl       | kd       | kz       | zl       | syl       | zsz   |
| hsl | 1.000     |          |          |          |           |       |
| kd  | 0.397***  | 1.000    |          |          |           |       |
| kz  | 0.367***  | 0.733*** | 1.000    |          |           |       |
| zl  | 0.220***  | 0.566*** | 0.203*** | 1.000    |           |       |
| syl | 0.162***  | 0.009*** | 0.114*** | 0.064*** | 1.000     |       |
| zsz | -0.148*** | 0.174*** | 0.130*** | 0.146*** | -0.026*** | 1.000 |

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The correlation coefficients between the variables are analyzed in Table 2, which shows that the correlation coefficients of the number of bearish, bullish, and neutral posts on the turnover rate are, in order, 0.397, 0.367, and 0.220. and at the 1% level, each of them is significant., indicating that the independent variable social media platform interactions are significantly related to stock liquidity.

#### 4.3. Panel Fixed Effects Regression Analysis

In this paper use the value of the number of daily posts on Oriental Fortune as a proxy variable for the social media user interaction index, which is analyzed using a panel fixed-effects model, and Table 3, which provides the regression findings for the H1 test, displays the test results.

**Table 3.** Panel fixed effects regression analysis

|       | (1)                   | (2)                   |
|-------|-----------------------|-----------------------|
| kd    | 0.0009***<br>[0.000]  | 0.0015***<br>[0.000]  |
| kz    | 0.0003***<br>[0.000]  | 0.0008***<br>[0.000]  |
| zl    | 0.0001***<br>[0.000]  | 0.0003***<br>[0.000]  |
| syl   | 0.0636***<br>[0.002]  | 0.1814***<br>[0.004]  |
| zsz   | 0.2151***<br>[0.001]  | -0.0073***<br>[0.000] |
| _cons | -4.8590***<br>[0.032] | 0.1827***<br>[0.002]  |
| r2    | 0.7731                | 0.2385                |
| N     | 104241.0000           | 104241.0000           |

Standard errors in brackets

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Test the impact of social media user interaction on stock liquidity is the study's benchmark question. The regression results are displayed in Table 3 with column (1) displaying the results with fixed time and individuals and column (2) displaying the results without fixed time and individuals. The coefficients of bearishness, bullishness, and neutrality in the social media user interaction index are 0.0009, 0.0003, and 0.0001, respectively, and all of them pass the test of significance level of 1%, as can be shown from column (1) after fixing the time and person. Regarding the amount of change, a 1% increase in the number of posts that are bearish causes the rate of change to rise by 0.09%, a 1% increase in the number of posts that are bullish causes the rate of change to rise by 0.03%, and a 1% increase in the number of posts that are neutral causes the rate of change to rise by 0.01%.

The results presented in Table 3(2), which show that there is no fixed time and individual, show that the social media user interaction index has a significant and positive impact on stock liquidity. The coefficients of bullishness, neutrality, and bearishness are 0.0015, 0.0008, and 0.0003, respectively, and are all significantly positive at the 1% level. The turnover rate increases by 0.15% for every 1% increase in bearish posts, 0.08% for every 1% increase in bullish posts, and 0.03% for every 1% increase in neutral posts. This is the amount of change..

In summary, social media user interaction significantly and positively affects stock liquidity, which is in line with the expectation of H1, and therefore, H1 is supported.

## 5. Conclusion

In this paper have investigated the impact of social media platform interactions on stock liquidity. Paper find that the number of bullish bearish and neutral posts on stock forums has an impact on stock liquidity. This study enriches the research between social media and stocks at the academic level and fills the gap between social media interaction and stock liquidity. While the majority of previous research has focused on the connection between traditional indicators and liquidity, this study discovers that social media is now a significant information transfer channel that significantly affects stock market liquidity. This goes beyond the traditional investor who is limited to following news and company announcements only.

On a practical level, it helps us to properly understand the role that social media has on the stock market. On the one hand, individual companies can increase the number of official accounts in stock bars, make full use of social media platforms, disseminate more information at the public level through stock bars and other social media platforms, increase interaction with investors, and form good communication channels and methods. On the other hand, regulators can focus on individual stocks with a relatively high posting volume and monitor the abnormal signals they send out about stock prices to prevent skyrocketing or plummeting. Another is the monitoring of investor sentiment, the network investor sentiment is highly contagious, but also amplifies investor sentiment, and investors very easy to "follow the herd", resulting in abnormal fluctuations in stock prices. Regulators can strengthen the monitoring of investor sentiment in stock bars to reduce the risk of stock manipulation by stock bar posts.

Future research can be expanded in the following ways. First, consumer sentiment can be studied by categorizing posts as emotional and non-emotional, and researching how investor mood affects the stock market. Second, the in-depth study of social media interactions on stocks can be strengthened to consider more comprehensively the interaction between social media interactions and the overall market trend, such as the impact of social media interactions on other indicators of stocks, to reveal more subtle market effects. Finally, the scope of the study can be extended to cross-country markets to comprehend the effects of social media more fully platform interactions on stock liquidity across different countries.

In future research expect in order to obtain a deeper comprehension of the mechanisms by which social media platforms affect the stock market, providing investors with more accurate and practical information and promoting the healthy development of the financial market.

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