Research on the Influence of Turnover Rate on Stock Investment Portfolio Returns

[1st] Ranran Lv

1071915083@qq.com

School of Economics and Management, Beijing Jiaotong University, Beijing, China

Abstract: Turnover rate refers to the frequency of stock turnover within a certain period of time in the market. It is one of the indicators reflecting the strength of stock liquidity. The higher the turnover rate, the more active the stock trading is, the higher the probability of stock price rise in the later stage, good liquidity, strong liquidity, and investors are more willing to purchase such stocks; Stocks with low turnover rates generally have poor liquidity and a high probability of later decline, making them easy to enter and difficult to exit. Investors are not optimistic about these stocks. This article attempts to explore new stock selection methods based on theoretical research, starting from the stock selection strategy in quantitative investment trading strategies. A-share listed companies in China from 2000 to 2015 are selected as research samples, and these stocks are selected to enter the stock pool to construct investment portfolios. The returns of each investment portfolio are obtained, and the results are visualized to illustrate the relationship between the turnover rate and the return rate of stock investment portfolios.

Keywords: Turnover Rate; Stock Returns; Investment Portfolio

1. Introduction

Turnover rate is a commonly used factor in quantitative stock selection. In multi factor stock selection models, turnover rate has long been proven to be an effective factor. The reason why we consider using turnover rate to measure the return of a stock portfolio is because it is linked to the liquidity of assets, and generally, stocks with good liquidity do not perform too poorly. Considering turnover rate takes into account risk factors. The turnover rate is linked to the liquidity of the stock. Generally speaking, a higher turnover rate indicates a more active trading of the stock, with a higher probability of a later stock price increase, good liquidity, strong liquidity, and investors are more willing to purchase this type of stock; Stocks with low turnover rates generally have poor liquidity and a high probability of later decline, making them easy to enter and difficult to exit. Investors are not optimistic about these stocks. When a stock is trading at the bottom and its turnover rate is high, it generally indicates that new funds have entered the market to operate the stock, and the stock has great potential for future growth. And the higher the turnover rate at the bottom, the easier it is for the stock price to rise, and the lighter the upward selling pressure. When the turnover rate of a stock suddenly increases and the trading volume also increases, it is also possible that investors are buying in large quantities, and the possibility of a future stock price increase is extremely high. As a strong stock in the market, the turnover rate is generally not low, and it is worth paying necessary attention.

ICIDC 2023, June 02-04, Nanchang, People's Republic of China

DOI 10.4108/eai.2-6-2023.2334624

This paper attempts to start from the stock selection strategy in the quantitative investment trading strategy, and try to explore new stock selection methods on the basis of theoretical research. We select Chinese A-share listed companies from 2000 to 2015 as research samples, select these stocks into the stock pool, and then use the turnover rate as a measurement indicator to build a portfolio, and conduct Winsorize processing to eliminate the impact of outlier, Finally, the return rates of each investment portfolio are obtained, and the results are visualized to illustrate the relationship between the turnover rate and the return rate of a stock investment portfolio.

2. Literature Review

Rouwenhorst (1999)[1] compared the stock returns of emerging and developed stock markets and found that small cap stocks outperformed large cap stocks, while value stocks outperformed growth stocks. Bayesian analysis of stock returns shows a strong cross-sectional correlation between return performance and stock turnover, and comprehensive evidence suggests that similar return relationships exist in markets around the world. On this basis, Su Dongwei and Mai Yuanxun (2004) [2]used the theoretical relationship between expected returns and relative bid ask spreads to conduct an empirical analysis using the data of China's Shanghai and Shenzhen stock markets. They found that when liquidity is measured by turnover rate, there is a significant liquidity premium in China's stock market, that is, assets with low turnover rate, high transaction cost and low liquidity have higher expected returns. By testing the null hypothesis hypothesis of transaction frequency and the alternative hypothesis of transaction cost, Further investigation reveals that the reason for the liquidity premium is transaction cost rather than transaction frequency. In the framework proposed by Avramov and Chordia (2006) [3]for testing asset pricing models applicable to a single security, it was also found that securities with low turnover rates have significantly higher returns.

However, the turnover rate and return rate are not simply linearly correlated. Because turnover rate not only represents the liquidity of stocks, but also represents the uncertainty of stocks in microeconomics and behavioral finance. Harris and Raviv's (1993) [4]theoretical model demonstrates a positive correlation between trading volume and the absolute value of stock price changes. The larger the absolute value of stock price changes, the higher the risk involved and the higher the risk return required in the future. Therefore, it also proves that there is a positive relationship between turnover rate and expected stock returns. Gervais et al. (2001) [5]studied the issue of extreme trading activities containing information on the future evolution of stock prices and found that stocks with abnormally high or low trading volume within a day or week tend to appreciate or depreciate in the following month, indicating that high turnover rates bring high stock returns.

When turnover rate is measured as a liquidity and uncertainty indicator, its prediction of stock returns is completely opposite, and its explanation is also completely different. Some scholars have proposed new interpretations or conducted comprehensive research on turnover rates. In the simple equilibrium model with liquidity risk studied by Acharya and Pedersen (2004)[6], they found that low liquidity, that is, low turnover rate, leads to low returns on securities during the same period and high expected future returns. Zhang Zheng and Liu Li (2006)[7] proposed that previous literature research was not comprehensive and only explained turnover rate as the

meaning of liquidity. They believed that under the Chinese stock market system, turnover rate may also represent the degree of volatility of investors' heterogeneous beliefs. From this perspective, research found that under the conditions of both market short selling constraints and investors' heterogeneous beliefs, The possible speculative trading that may cause overvaluation of stock prices is a more appropriate explanation. That is to say, the turnover rate to a greater extent represents the degree of disagreement among investors. Stocks with greater disagreement are more likely to be overvalued and have lower future earnings expectations. Barinov (2015) [8]found that the negative relationship between turnover rate and expected stock returns cannot be explained by liquidity or liquidity risk. Turnover rate represents the degree of uncertainty in stocks, and the greater the total volatility, the higher the uncertainty. Tan Songtao et al. (2010)[9] further studied the weekend effect of turnover rate and proposed that the total amount of overnight information on Monday should exceed other trading days of the week. However, due to the long reaction time of investors to Monday information, the degree of disagreement among everyone on Monday decreased, leading to a significant decrease in turnover rate level on Monday, thereby affecting stock returns. Shao Xinjian et al(2011)[14], Liu Jingjun and Xu Haoping (2012) [10]further studied the relationship between institutional investors and market stability from the perspective of using turnover rate as one of the indicators, and found that the trading changes of short-term institutional investors did indeed exacerbate market volatility. Lin Hu et al.(2013)[11]thought Future returns will decrease. He Chengying et al. (2021)[12] measured investor sentiment using turnover rates and found through empirical research that stock portfolios with particularly high turnover rates have significantly lower returns.

3. Data Description and Indicator Construction

This article selects A-share listed companies in China from 2000 to 2015 as research samples, and the data source is the China Stock Market Trading Database in the CSMAR database. After sorting, a total of 339827 monthly observations of companies were obtained.

To study the impact of high and low turnover rates on future stock returns, this article first needs to construct indicators based on sample data. Referring to Akbas et al. (2022)'s method[13], turnover rate is defined as trading volume divided by the total number of shares in circulation. At the same time, the calculation expression for turnover rate is constructed based on the indicators in the selected database as follows:

$$turnover = Mnvaltrd * 0.001 / Msmvosd \quad (1)$$

In the above equation, turnover represents the turnover rate, Mnvaltrd represents the monthly trading amount of individual stocks in yuan, and Msmvosd represents the monthly circulating market value of individual stocks in thousands of yuan. Obviously, the monthly trading amount of individual stocks is equal to the monthly trading volume multiplied by the trading price, and the monthly market value of individual stocks is equal to the total number of shares in circulation multiplied by the trading price. Combined with the definition of turnover rate and the different units of Mnvaltrd and Msmvosd, the expression for turnover rate turnover can be obtained as shown in equation (1). Finally, in order to eliminate the influence of outlier, we winsorize the turnover rate of the main continuous variable turnover at the level of 1%.

4. Strategy Construction and Effect Analysis

Table 1 shows the results of the original return rate of the ten decile portfolio constructed based on the turnover rate under the condition of equal weight and value weighting. Table 1 and Figure 1 show that the original rate of return of the ten portfolios constructed according to the equal weight method is 1.3% - 1.9%, while the original rate of return of the portfolios constructed according to the value weight method is 0.9% - 1.5%. In each corresponding decile portfolio, the return of the equal weight is higher than the value weighted return.

In addition, whether under equal weight or value weighting methods, the returns of investment portfolios with the highest and lowest turnover rates are the lowest in the entire sample. The higher the turnover rate of a stock, the more active its trading is, making it a popular stock; On the contrary, stocks with low turnover rates are considered niche stocks. This study finds that in the constructed quantile portfolio, the most frequently traded hot stocks and the least traded cold stocks will have the worst future stock returns, which may be due to the high speculative nature of hot stocks, which will have large fluctuations in stock prices in a short period of time, thus increasing investment risk and reducing stock returns. At the same time, the cold stocks have the characteristics of poor liquidity and small price changes, It may be caused by the financial situation of the listed company in the stock market or external factors such as economic environment and government macroeconomic policies, resulting in higher investment risks and lower future returns in unpopular stocks.

This article also found that the hedging investment portfolio strategy of buying stocks with high turnover rates and selling stocks with low turnover rates cannot achieve significant returns, as stocks with extremely high and low turnover rates perform poorly and have almost the same level of returns. This indirectly reflects that turnover rates cannot be used as a good indicator to construct hedging investment portfolios and make profits in the Chinese stock market. In contrast, stocks with intermediate turnover rates will perform better in the future. In particular, stocks with turnover rates of 40% - 50% at the quantile level will have the highest average return among the ten digit portfolios under both calculation methods, and the difference between the return and the worst performing portfolio is 0.6%. On the whole, the Yield curve of the quantile portfolio constructed according to the turnover rate from low to high shows a gentle inverted U-shaped shape.

Table 1. Average return results of equal weight and value weighted investment portfolios based on turnover rate

Investment Portfolio	Equally Weighted Return	Value Weighted Return
COL1	0.0135716836	0.0090890173
COL2	0.0166656884	0.0128818879
COL3	0.0170515696	0.0114984549
COL4	0.0179690608	0.0124553156
COL5	0.0186918989	0.0140412345
COL6	0.0182436406	0.0124081295
COL7	0.0180297659	0.0132326966
COL8	0.0177189483	0.0125647569
COL9	0.0166327078	0.0123530656
COL10	0.0146698150	0.0098794234
High-low	0.0010981313	0.0007904062

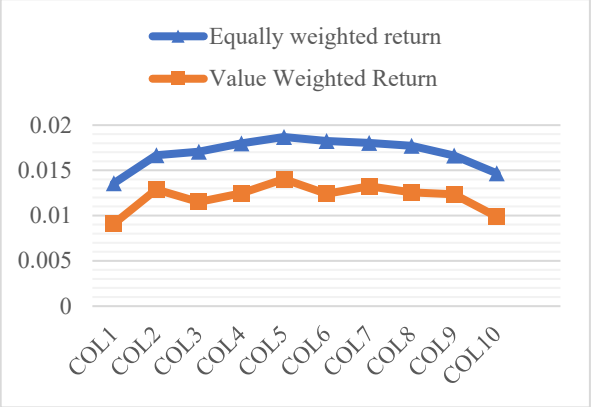

Figure 1: Average Return Results of Equiweighted and Value Weighted Investment Portfolios Based on Turnover Rate

5. Conclusion

The main finding of this article is that the conclusion that a high turnover rate means a strong stock is not always valid. For new stocks, the turnover rate is generally high in the early stages of listing, but it has become a fact that new stocks open high and sell low after listing. Moreover, the high turnover rate of stocks may not necessarily be the result of the normal operation of the market. A few investors manipulating the market can also achieve such a state. The pursuit of short-term funds is highly speculative, and the fluctuation of stock prices is large, increasing the risk. When the stock price has been continuously rising for a period of time and the turnover rate suddenly forms another peak, it is highly likely that investors want to cash out. At this time, the return on investment portfolio is highly likely to decline. In contrast, stocks with a turnover rate at the middle level (i.e. 40% -50%) will perform better in the future.

The turnover rate is linked to the liquidity of the stock. The higher the turnover rate, the more active the trading of the stock, and the higher the probability of the stock price rising in the later stage. Moreover, with good liquidity and strong liquidity, investors are more willing to buy this type of stock, so they cannot choose a low turnover rate. However, sometimes an excessively high turnover rate represents the result of market operations by a few investors, so an excessively high turnover rate will also reduce the return of the portfolio.

References

[1]K. Geert Rouwenhorst. Local Return Factors and Turnover in Emerging Stock Markets[J]. The Journal of Finance,1999,54(4):1439-1464.

[2]Su Dongwei, Mai Yuanxun. Liquidity and Asset Pricing: An Empirical Exploration of Turnover and Expected Returns on Chinese Stock Markets [J]. Economic Research Journal,2004(02):95-105.

[3]Doron Avramov, Tarun Chordia. Asset Pricing Models and Financial Market Anomalies[J]. The Review of Financial Studies,2006,19(3):1001-1040.

[4]Harris M,Raviv A. Differences of opinion make a horse race[J]. The Review of Financial Studies,1993,6(3):473-506.
[5]Simon Gervais,Ron Kaniel,Dan H. Mingelgrin. The High-Volume Return Premium[J]. The Journal of Finance,2001,56(3):877-919.
[6]Viral V. Acharya,Lasse Heje Pedersen. Asset pricing with liquidity risk[J]. Journal of Financial Economics,2004,77(2):375-410.
[7]Zhang Zheng, Liu Li. Turnovers and Stock Returns:Liquidity Premium or Speculative Bubbles??[J]. China Economic Quarterly,2006(02):871-892.
[8]Barinov A. Why does higher variability of trading activity predict lower expected returns?[J]. Journal of Banking & Finance,2015,58:457-470.
[9]Tan Songtao,Wang Yaping,Liu Jia. Gradual information flow and weekend effect of turnover rate [J]. Management World,2010(08):35-43.
[10]Liu Jingjun, Xu Haoping. Institutional investors: long-term investors or short-term opportunism?[J]. Journal of Financial Research,2012(09):141-154.
[11]Lin Hu, Sun Bo, Liu Li. Turnover Volatility,Resale Option and Cross-sectional Stock Return [J]. Journal of Financial Research,2013(12):181-193.
[12]HE Chengying, CHEN Rui, XUE Bing, HE Muyuan. Investor Sentiment,Limited Arbitrage and Stock Price Anomalies [J]. Economic Research Journal,2021,56(01):58-73.
[13]Akbas Ferhat,Boehmer Ekkehart,Jiang Chao,Koch Paul D.. Overnight returns, daytime reversals, and future stock returns[J]. Journal of Financial Economics,2022,145(3):850-875.
[14]Shao Xinjian,Wu Hemao,Li Zeguang,Tang Dan. The Puzzle of Extremely High Turnover of IPOs on the First Listing Day in China [J]. Journal of Financial Research,2011(09):122-137.