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Pair Tarding and Residual Risk: A Case Study Based on the China's Securities Firm

Jiaxin Chen*

School of Mathematics and Physics, Xi'an Jiaotong-Liverpool University, Suzhou, 215123, China

Abstract. With the development of the financial field, there are more and more hedging strategies accompanied by an increasing number of residual risks in these strategies. These risks are generally ignored by people, resulting in losses. This paper begins with CITIC Securities, the leader in China's securities industry, and analyzes its large-scale paired trading case, spreading spreads in the A-stock market. Firstly, at the macro trading level, this paper finds that there are still credit risks and liquidity risks in the trading of this investment portfolio by referring to the prospectus of CITIC Securities' bond offering. It puts forward relevant suggestions to reduce these risks. Next, the focus shifts to the analysis of the portfolio strategy itself. The paper identifies four risk points: stock price rise in advance, abnormal events, reduced hedging opportunities, and market irrationality. It also provides suggestions on how to mitigate losses caused by these remaining risks. For example, setting up profit and loss points, establishing relevant departments to control the remaining risk points, maintaining good customer credit, and improving the company's credit rating.

1 Introduction

CITIC Securities is a comprehensive industry leader and the only securities company in China with assets exceeding one trillion yuan. It has garnered a wide reputation and a strong brand advantage in the domestic market. It was the first in the industry to propose and practice asset management business, which, along with investment banking, brokerage, and proprietary investment, constitutes the company's main business. Additionally, as an investment advisory company, CITIC Securities tailors various financial service solutions for clients, including a variety of financial derivatives business, such as options, futures, and hedging [1].

This paper primarily studies the matching trading case of CITIC Securities in the A-share market and analyzes its residual risk. From the perspective of transaction motivation, matching transactions can be divided into two types: spread widening and spread convergence [2].

Spread convergent pair trading involves taking two fundamentally similar stocks that historically satisfy a long-term equilibrium relationship. It assumes no recent events have affected significant changes in stock prices. When the price difference between the two stocks is greater than the transaction cost, buy low-priced stocks and short high-priced stocks simultaneously, and close the position after waiting for the price difference to fall [2]. Convergent spread trading has shown a broad prospect in the A-share market. Research by Mai and Wang found that from January 1, 2004, to December 31, 2010, using the method of spread convergence on data pairs composed of stocks with complete data in the Shanghai Stock Exchange 50 and Shenzhen Stock Exchange 40 yielded positive returns in both markets after deducting transaction costs. The maximum positive returns, 6.43%, were obtained in the Shenzhen market using the FTBD method [3].

Due to the special events of individual stocks, the long-term equilibrium relationship between two stocks (or indexes and stocks) may be destroyed, resulting in an enlarged price spread. Therefore, it is necessary to select representative stocks or sector indexes and establish a long-short paired investment portfolio to earn profits [2].

This paper studies the large-scale paired trading mode in which representative stocks of the industry are selected, and long-short paired investment portfolios are established with individual stocks to offset industry risks and obtain stable excess returns.

2 Case description

On the evening of April 20, 2011, Tasly announced that two new drugs had recently obtained the new drug certificate and drug registration approval documents issued by the China Food and Drug Administration. The news was clearly positive for Tasly, but it was not enough to propel the stock into an independent rally. If you had bought Tasly based on the announcement information, the investment would have suffered a loss of nearly 8% between April 20 and April 28. Moreover, due to the general underperformance of pharmaceutical stocks, after two months of holding, as of June 20, the stock was still down 2.2% on that day.

* Corresponding author: Jiaxin.Chen21@student.xjtlu.edu.cn

Choosing to trade long-short pairs and selecting Guangzhou Pharmaceutical, in the same industry as Tasly, as a counterparty among the underlying securities available for sale, would have resulted in a gain of 3.6% when the share price was adjusted after the announcement (as of April 28). Two months later (June 20), the cumulative profit was 13% [2].

3 Residual risks at the macro trading Level

The long-short pairing portfolio effectively uses representative stocks of the sector to hedge industry risks, thus obtaining stable excess returns. However, there are still some residual risks in the portfolio. From the perspective of macro trading, as a securities company, CITIC Securities mainly faces industry risks in the following four aspects: financial risk, operational risk, management risk, and policy risk [4].

Financial risk can be divided into the following three aspects, namely credit risk, liquidity risk, and fair value change risk of corporate financial investment assets. These three points will not affect whether the portfolio itself is profitable, but for the actual operation, if there is a client participating in the portfolio, there may be two risks, such as credit risk and liquidity risk.

The credit risk of the portfolio with convergent spread mainly comes from three aspects: First, when trading the portfolio, there is a fund gap, and CITIC Securities is responsible for settlement on behalf of customers, which will cause the risk of loss. The second is to buy the portfolio in the form of securities financing such as margin financing and stock pledge repurchase. On the maturity date, if the customer fails to perform the contract, it can cause risks.

The company selected in the three portfolios has the credit risk that financial fraud has not been detected, which is illustrated here (Case: Chaori Company announced a forecast of 2011 profit of more than 8200w yuan one week before the bond issuance, making its bonds sought after by the securities market, but amended the announcement one week after the bond issuance, and the revised profit was 142 million yuan less than before) [5]. If this event occurs in the portfolio, the original good news is directly converted into a negative, which will directly violate the spread and expand the large pair trading strategy, resulting in an immeasurable loss.

Furthermore, if there are behaviors of OTC derivatives transactions such as interest rate swaps, stock income swaps, OTC, and forward transactions in portfolio transactions, there will be the possibility of counterparty default and the risk of counterparty default (Case: Company A and Sekwang Shipyard of Korea signed a shipbuilding contract on October 31, 2008, and settled in the form of progress payment in advance. The ship was scheduled to be delivered in February 2011, but two years after the implementation of the project, the ship was not delivered, and Sekwang Shipyard suddenly applied for bankruptcy protection).

Liquidity risk refers to the risk that a company cannot obtain sufficient funds at a reasonable cost in time to repay maturing debts, fulfill other payment obligations, and meet the capital needs of normal business operations [4]. The drying up of liquidity in financial markets led to the 2008 global financial crisis [7].

If the commissioning party is produced, it may lead to the first and second types of credit risk, the generation of customer credit risk, and the possible liquidity risk. If the investment portfolio involves over-the-counter transactions, it will lead to the emergence of the fourth type of credit risk in the credit risk, counterparty credit risk. Operating risks, management risks, and policy risks related to the securities industry are not closely related to the portfolio.

For credit risk, CITIC Securities may establish a set of internal credit rating systems to evaluate the credit of customers, counterparties, and portfolio companies, restrict the investment of customers with low credit or require them to provide collateral for a guarantee, and require them to pay sufficient margin to reduce the risk of credit failure. Citic Securities can conduct due diligence on portfolio companies to reduce the risk of undetected financial fraud. For counterparties with low credit, they should reduce the amount of transactions with them, reduce the proportion of such transactions, and try to trade with counterparties with high credit ratings. In addition, CITIC Securities can establish a sound legal department to pursue the breach of trust, so as to reduce the breach rate of customers and counterparties and reduce the possibility of bad debts. For liquidity risks, CITIC Securities can increase the reserve fund, establish good cooperative relations with a number of banks, increase the credit limit of its own assets, and maintain a low asset liability ratio and sufficient cash flow.

4. Residual risk of the portfolio itself

From the perspective of the portfolio itself, the remaining risk points in this case mainly lie in the following four aspects: stock price rise in advance, abnormal events, reduction of hedging opportunities, and market irrationality.

The early rise in share prices means that some of the excess gains may have been reflected in share prices before the information was made public.

For example, the annual financial report released by Jiuan Medical on January 20 shows that the performance of Jiuan Medical increased by 243.46% to 364.68% compared with the same period of the previous year [8]. This should have been obvious good news for Jiuan Medical, and the stock price should have risen in response to this positive development.

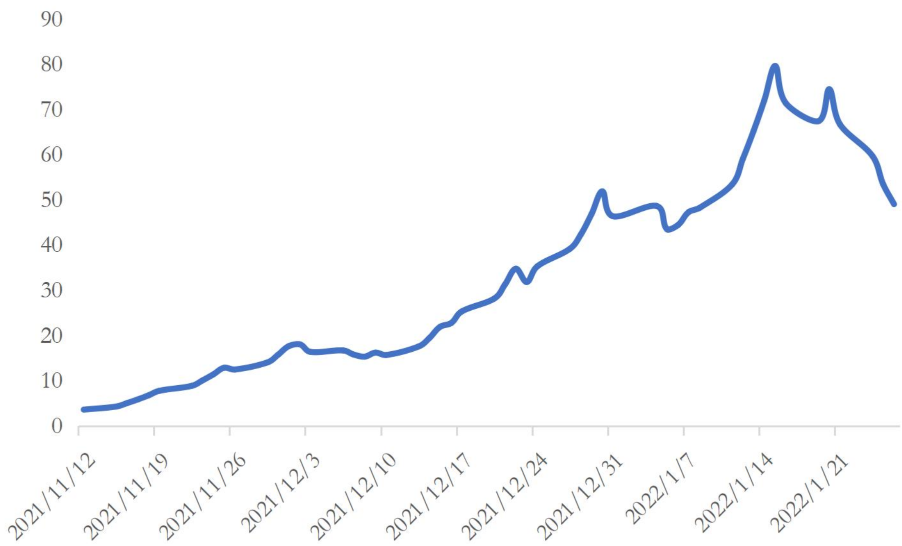

Fig. 1. Jiuan medical stock prices

Data source: Straight flush
Photo credit: Original

Instead of rising, the stock price fell nearly 30 percent the following week. As can be seen from Figure 1, in the two months before the announcement of annual results, the stock price of Jiuan Medical rose nearly tenfold. Due to the sharp rise in the early stage, the early cashing of excess earnings, and even the cashing of overdraft, the stock price of Jiuan Medical fell in the week after the announcement of annual results.

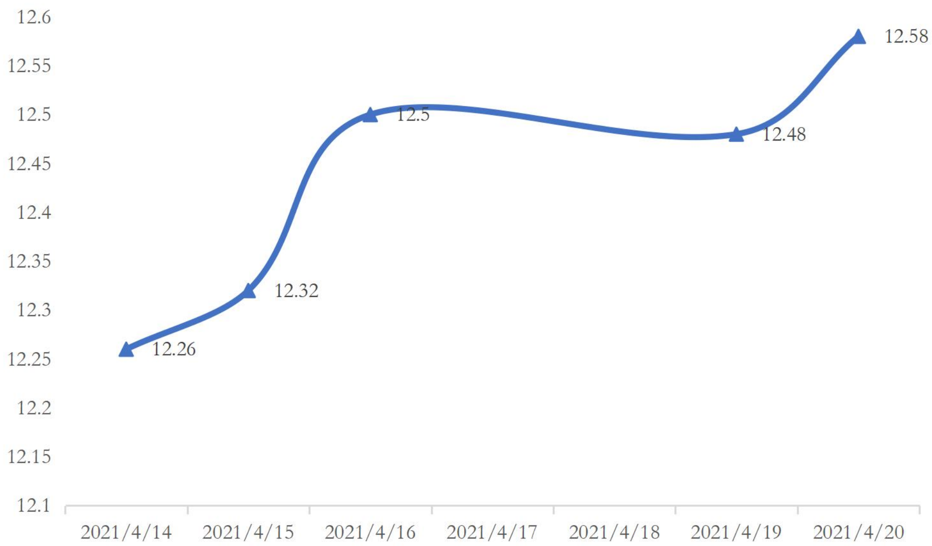

Fig. 2. Changes in Tasly stock prices

Data source: Straight flush
Photo credit: Original

It can be seen from Figure 2 that from April 15 to April 20, Tasly experienced an obvious slight rise in the days before the good news came out, and this slight rise may be a form of early cashing of excess returns.

Secondly, after opening a position, either side of the hedge portfolio is susceptible to unusual events. Here are two cases (Case 1: On March 8, 2022, due to the dual impact of the Russia-Ukraine conflict and Qingshan Holding Group's short cover, the nickel price, which was originally trading at $10,000 to $20,000, soared by $30,000 in a few minutes and even reached a sky-high price of 100,000 yuan per ton at 6 o'clock on the same day. Without government supervision, this incident would be completely out of control, and Qingshan Holding Group would directly face bankruptcy [9].

Additionally, on November 21, 2023, Douyu issued an announcement confirming that the CEO of Douyu was arrested for casino crimes, and Douyu's stock price fell by more than 20% in a week (see Fig. 3), constituting a shocking decline [10]. If a similar event occurs, the short side rises, and the long side falls sharply, leading to unpredictable losses.

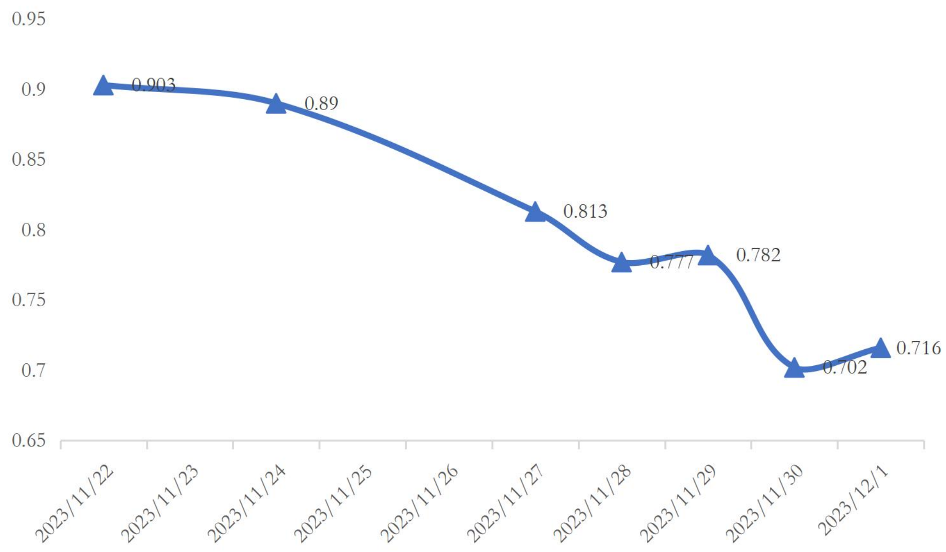

Fig. 3. Changes in Douyu stock prices

Data source: Straight flush

Photo credit: Original

Third, if too many participants adopt similar strategies, the opportunities for hedging trades will be greatly reduced (similar to arbitrage, if there are too many participants, then the arbitrage space will be reduced).

Fourth, long-term irrationality or short-term sudden changes in the market may occur. Some malicious short selling can lead to the decline of stocks in the portfolio that were originally long, and some own-index events. For example, on December 8, 2022, the bizarre flash collapse of Ketobiology fell directly from -1.5% to -20.01% in the late bidding stage for one second, with the last trading volume being 942 lots and a transaction amount of about 2.25 million lots. After a similar short-term sudden flash collapse, it may lead to a reduction in customer confidence and forced liquidation, resulting in losses. Customer credit will be reduced.

To anticipate the stock price rising in advance, investors can observe the change in the stock price before the good news is released. If there is a significant rise before the good news comes out, people need to incorporate this part of the rise into the portfolio and make a judgment on the future stock price rise space according to the rising stock price and the degree of good news.

For abnormal events, CITIC Securities may establish a risk control department and set up a risk limit. The risk control department should monitor the relevant influencing factors of the investment portfolio daily. When abnormal events occur and the risk level exceeds the established limit, the risk control department should take timely measures.

In situations where too many participants adopt similar strategies before adopting a long-short paired portfolio, the investment department of CITIC Securities may evaluate the portfolio to see if there is still profit space. If there is, investors need to set up a good stop profit and stop loss to maintain profit.

In the case of long-term irrationality or short-term sudden changes in the market, CITIC Securities can set up a good stop loss and take timely action against malicious short selling to prevent the expansion of losses. In the case of short-term sudden changes, relevant countermeasures should be taken immediately, the cause of sudden changes investigated to avoid risks and prevent further expansion of losses. The client should be provided with timely relief.

For the risk of timely stop loss, in the case of oolong events, timely explanation, increasing customer confidence, and maintaining their own credit are essential.

5 Conclusion

In general, CITIC Securities holds a significant advantage in scale and is the first securities company in China with an asset scale exceeding one trillion yuan. It expands a large paired investment portfolio by utilizing price spreads and establishes a long-short paired investment portfolio with individual stocks using representative stocks of the industry they are in, thus offsetting industry risks and achieving a stable paired trading mode of excess returns. It can effectively reduce the impact of sectors on dividends and systemic risks. However, there are still some remaining risks in this portfolio.

Firstly, by analyzing the industry risks faced by CITIC Securities, this paper finds that there are still credit risks and liquidity risks in this portfolio from the perspective of macro trading and puts forward relevant suggestions to mitigate these risks. Then, the focus shifts to the analysis of the portfolio strategy itself, identifying four risk points: stock price rise in advance, abnormal events, reduced hedging opportunities, and market irrationality. Combined with case analysis, the paper provides relevant suggestions to minimize the risk of this investment.

In summary, spreading a large paired portfolio is a simple and low-risk trading strategy. This type of long-short paired trading portfolio can reduce the impact of market fluctuations on good or bad news and has wide applicability. However, it also needs to consider influencing factors such as credit risk, liquidity risk, stock price rise in advance, abnormal events, reduction of hedging opportunities, and market irrationality. CITIC Securities can establish relevant departments to control the remaining risks, maintain a low asset liability ratio and sufficient cash flow, set up profit and loss points for the investment portfolio, maintain good customer credit, and upgrade the company's credit rating.

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