The Performances of Different Trading Strategy for Hegde Funds Based on Data Analysis

Wanruo Chen[1a†], Yao Deng[2b†], Lianxiu Wang[3*†]

[1]*School of International Business, Chongqing Technology and Business University, Chongqing, China*
[2]*School of Management, Jinan University, Guangzhou, China*
[3]*School of financial management, Hefei Normal University, Hefei, China*
[a]*ldp@ctbu.edu.cn*
[b]*2518379254@qq.com*
**1811441032@stu.hfnu.edu.cn*
[†]*These authors contributed equally*

Abstract

The investment strategies of hedge funds are diversified. In the face of changing market conditions, it remains unclear whether the hedging strategy will be affected by external factors within a specific period, resulting in abnormal performance or not. On this basis, we investigate the performance of three well-known hedge funds trades (market neutral trade, merger arbitrage and momentum) in terms of data during January to March in 2022. Meanwhile, we explore the relevance between the success and failure of the trade and the strategy, and whether there are other factors that affect the effectiveness of the strategy in the trade. According to the analysis, even in the face of sudden changes in the international situation (e.g., the Russian Ukrainian war), the fluctuation of stock price is not as intense as expected. These results shed light on the effectiveness of hedging strategies is different for different portfolios.

Keywords: *Market Neutral, Merger Arbitrage, Momentum Strategy.*

1. INTRODUCTION

Hedge originated from the concept of risk management, which is a strategy to offset the potential risk losses of underlying assets by investing in certain assets or derivatives that are negatively related to the volatility of the underlying assets. The high leverage of hedge funds has quickly attracted a large number of risk-loving investors in the market [5]. After several years of development, hedge funds have become an important part of the financial market. Contemporarily, the globalization of the new corona virus has a huge impact on the hedge fund market.

For merger arbitrage trade, it is an investment technique that uses the price difference before and after the merger of enterprises to conduct stock transactions for companies that may be merged. During the operation, if both companies are listed companies, investors can operate through common stocks, and the operation method and income are relatively fixed. In this case, this arbitrage is a relatively high liquidity strategy for investors. Jason et al. has studied this kind of strategy in the year of 2007 [7]. For momentum trade, Momentum trading strategy is an investment strategy that pre-sets filter criteria for stock returns and trading volumes, and buys or sells stocks when stock returns or stock returns and trading volumes meet the filter criteria at the same time. The most salient feature is that the potential profit growth of momentum investing can be very large. Dharshan et al. have investigated the momentum strategy in 2007 [1]. When it comes to market neutral trade, market neutral strategies are typically implemented by taking matched long and short positions in different stocks to increase the returns from making good stock choices and reduce the returns from broad market volatility, which has been discussed in Ref. [4].

We will present three groups of trades made by each of the three group members using different strategies. Each group of trades will discuss the specific content and process of the trade, as well as the reasons accounted for buying stocks of both parties, and the motivation for executing the strategy. The rest part of the paper is organized as follows. The Sec. II will present the methodology used in those trades, including different data and various trades design. Subsequently, the Sec. III is going to demonstrate whether the merger arbitrage fits in

G. Vilas Bhau et al. (Eds.): MSEA 2022, ACSR 101, pp. 835–842, 2023.
https://doi.org/10.2991/978-94-6463-042-8_119

a specific company merger case at a specific time period or not. Afterwards, the Sec. IV will show the mechanisms of momentum strategy in the specific period and situation that we set. The Sec. V will reveal the procedure and report the performance of market neutral strategy works. Afterwards, the Sec. VI will discuss the limitations of current study and offer a future prospect. Eventually, a brief summary is given in Sec. VII.

2. METHODOLOGY

This paper implemented a mixed-methods study that included both quantitative and qualitative descriptive research. By reasonably using two different research approaches, quantitative and qualitative, we were able to answer different sub-questions of the central question separately, and ultimately could better answer the key question of the study [11]. The relative benchmark in this study was based on the S&P 500 Index from January to April of 2022. The effectiveness of an investment strategy under recent exceptional economic conditions is measured by comparing the returns of the three strategies to the S&P 500. The Microsoft Excel application program was used to make the data calculations. Data analysis includes following procedures:

- Calculating Excess Returns
- Calculating Sharpe index
- Calculating Return

In identifying sources of literature review, multiple databases were used. Google Scholar and Chinese National Knowledge Infrastructure was utilized to get a deeper look at three strategies that are being studied in academia today. Additionally, to more accurately and quickly pick the right trades, we reviewed Yahoo Finance and Investing.com data on stock prices, beta and P/E ratios for the U.S. market from January to March 2022.

3. MARKET NEUTRAL

For this strategy, we long Facebook stocks and short NVIDIA. We long Facebook mainly because the price of this stock plunged 26.39% the day before, i.e., February 3, the lowest point in a year -$237.36. Compared with the annual average price of $321.17 in 2021, this price is obviously undervalued for this Internet giant company. Besides, Facebook is investing a lot of manpower and material resources to enter the meta universe field. Although it is difficult to see significant results in the short term, we are still optimistic about the future of this field once Facebook breaks through the technical barriers of VR wearable devices. For example, the weight of the device is significantly reduced, it is not difficult to imagine that the price of the stock will pick up. Meanwhile, we shorted NVIDIA's stock. On the one hand, we shorted NVIDIA because its main business is too dependent on cryptocurrency mining, and regulators are taking practical actions to limit the unnecessary expansion of cryptocurrency and mining industry. On the other hand, NVIDIA is too dependent on traditional business, but the new business has not improved. In addition, the failure to acquire ARM has prevented NVIDIA from entering the high-end smartphone market.

Market Neutral means have Beta=0 for the entire portfolio. On February 4, 2022, Facebook's beta value is 1.28 and opening price is $134.97. NVIDIA's beta value is 0.44 and the opening price is $239,72. We assume to long x shares FB and short y shares NVIDIA, and use $135\times1.28x-240\times0.44y = 0$ to calculate the approximate proportion of x and y is 0.6. In the end, we longed 600 FB shares and shorted 1000 NVIDIA shares.

Market neutral funds are defined as funds that take long and short positions in various securities while trying to avoid exposure to the equity market [2]. Market Neutral means have Beta=0 for the entire portfolio. On February 4, 2022, Facebook's beta value is 1.28.and opening price is $134.97. NVIDIA's beta value is 0.44 and the opening price is $239,72. We assume to long x shares FB and short y shares NVIDIA, and use $135\times1.28x-240\times0.44y = 0$ to calculate the approximate proportion of x and y is 0.6. Therefore, in the end, we longed 600 FB shares and shorted 1000 NVIDIA shares.

On March 31, the return rate of this trade was -10.69%. Referring to the total return rate of S & P500 from February to March 2022 of - 5.22%, this trade failed. This hedge increased the loss compared with the yield of -5.37% of FB, but reduced the loss compared with the yield of -13.82% of NVIDIA. Based on the previous consideration of the two companies, the choice of which one to be long and which one to be short is subjective. Traditional economic theory is based on the assumption that traders are completely independent and rational; however, trading behavior in the real market is often coupled by various factors [9]. This is understandable, as noted by Vikas Agarwal and Naik that a large number of equity-oriented hedge fund strategies exhibit payoffs resembling a short position in a put option on the market index, and therefore bear significant left-tail risk, risk that is ignored by the commonly used mean-variance framework [10]. We assume a completely opposite situation, i.e., we long NVIDIA and short FB. Our rate of return is 10.69%, which can be said to be a very good rate of return in the past two months. In this case, our strategy can be said to be very successful. But similarly, compared with the 13.82% yield of only long NVIDIA, this strategy reduces the yield, and compared with the 5.37% yield of only short FB, this strategy increases the yield It can be said that if the prices of two stocks in the portfolio rise and fall, this hedging strategy plays a role in balancing the returns, whether positive or negative. From this point of view, the strategy is effective.

On February 24, the Russian Ukrainian war officially started, which can be said to be a sudden change in the

international situation during this trade. However, from the trend chart of stocks in the two cities, although the ticket prices of both stocks rose on February 25, the increase was not large.

Figure 1. Share price movement of Facebook

Figure 2. Share price movement of NVIDA

4. Merger Arbitrage

4.1. Definition

Merger arbitrage is an event driven strategy, which originated from Gustave Levy, a partner of Goldman Sachs in the 1940s. Merger arbitrage is an investment technology that uses the price difference before and after the merger to trade the shares of the companies that may be merged. Its purpose is to use the price difference before and after the merger to buy the shares of the companies to be merged. Investors usually sell the shares of the acquired companies in the hope that the share price of the acquired companies will fall. Meanwhile, to hedge the risk of merger failure, merger arbitrage refers to the stock of the company whose stock price is expected to rise in the merger transaction. Arbitrage refers to the act of buying stocks immediately and reselling them at a higher price.

4.2. Current status

Merger arbitrage has been studied by many people. They study the profitability and applicability of merger arbitrage in different countries, different periods, different historical backgrounds and different emergencies.

Liang et.al had explored merger arbitrage's performance in different regions after Covid-19, claimed that there are great differences in financial markets in different regions, which was published on 2021-atlantis-press.com [12].

4.3. Index Analysis

In this part, we will reveal the relevant indicators used to measure stock returns. First one is excess return, it is the return that exceeds agency return. The excess return will depend on the specified return on investment comparison for analysis. Some of the most basic returns comparisons include risk-free interest rates and benchmarks with similar risk levels to the investments analyzed. Excess return is an important indicator that can help investors measure their performance compared with other investment options. Generally, all investors want a positive excess return because it provides investors with more money than they can get by investing elsewhere. Excess return calculation as Excess return=Actual return rate-Normal (expected) return rate. Thus, we gather historical rate of US treasury yield from December 1, 2021 to April 1, 2022. Besides, we use the average of them we calculated as the market return rate in this case analysis. Excess return=Daily stock return - daily US treasury bond return.

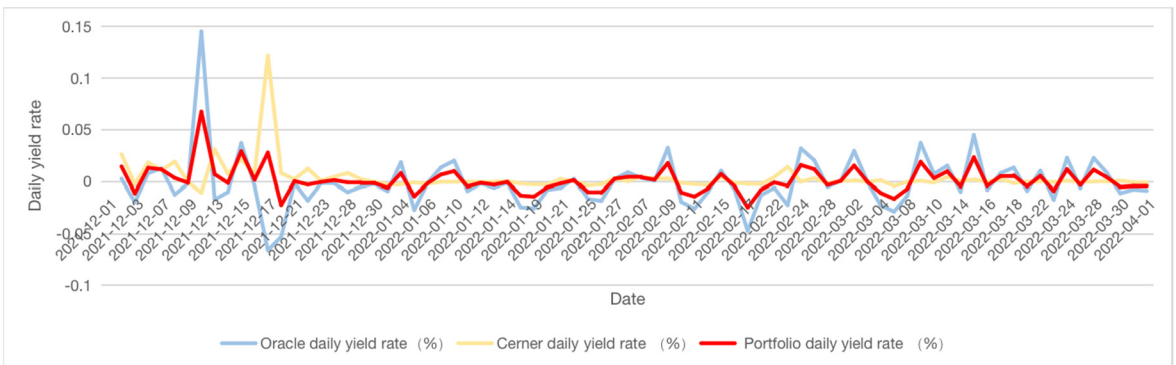

Figure 3. The comparison of daily yield rate between Oracle and Cerner

Figure 4. US treasury yield

Second one is the Sharpe ratio, which is an indicator that reflects the extent to which the net value growth rate of unit venture fund exceeds the risk-free return rate. In other words, the sharp ratio reflects the expected excess return for each additional risk. We can use sharp index to quantitatively analyze the risk value we can bear, and seek the fund with the highest return under the same risk through this risk value. High sharp ratio means that the fund is expected to obtain more excess returns when it bears certain risks. Sharpe index = [average return -risk-free return]/standard deviation. After calculation, one can get the risk-free rate, excess return, shape ratio for Oracle and Cerner and the whole portfolio.

TABLE 1. RATIOS OF ORACLE, CERNER AND THE WHOLE PORTFOLIO

	Risk Free	Mean Return	Excess return	Sharpe Ratio
ORACLE	0.01%	-0.11%	-0.1%	-4.4%
CERNER	0.01%	0.3%	0.3%	19.5%
Portfolio	0.01%	0.1%	0.1%	8.8%

Seen from Table. I, the excess return of this portfolio is 0.1%, that shows that the return on investment of this portfolio is reasonable. The Sharpe ratio of it is 8.8%, which indicates that the rate of return is higher than the risk of fluctuation and the return of this portfolio is better and the risk cost performance is better.

4.4. Case Analysis

In the case study, we selected the merger between Oracle and Cerner as the analysis object, and we also operated on Stocktrack. The bidding company and the target company are both headquartered in the same area, meaning that there is no currency control in the case we chose. For this trade, we choose to short Oracle and buy Cerner. We use merger arbitrage, causing Oracle announced that it has agreed to buy Cerner for around $95 per share. Moreover, we did this trade when Oracle and Cerner are $ 75.55 and $91.33 respectively, and the last price for them are $74.81 and $93.11, the return for them are 3.13% and 1.75% separately. In addition, the total profit of this trade is $ 793 and the return is 2.38%. The total profit of this trade is 793 and total return of this trade is 2.38%. Besides, the S&P 500 return from December 2021 to March 2022 is -10.064%, which is far less than 2.38%, that also shows the advantages of this transaction.

As illustrated in Fig. 5, the superiority of merger arbitrage in this transaction we did, in a specific time period and background: the global epidemic is becoming more and more common, specific company types: pharmaceutical-based companies and IT-based businesses benefits in the company. In the meantime, as listed in Table. II, after Oracle announced the acquisition of Cerner on December 20, 2021, Oracle's share price fell rapidly. On the contrary, Cerner's share price rose rapidly, which is another aspect to prove the adaptability of merger arbitrage in this specific environment superiority.

From the Financial data analysis, the PEG Ratio is 2.70 for Oracle, and the trailing PE is 22.13 and forward PE is 14.58, and its operating cash flow increased from 145.51 billion in 2019 to 158.87 in 2021. For Cerner, the PEG ratio 2.70, and the trailing PE is 50.68 and forward PE IS 25.24， and its operating cash flow rose from about 57 billion in 2019 to around 59 billion in 2021. We can witness that investing in those two companies will take low risk with low PEG ratio and the PE which is expected to decline and their operating ability is quite strong with increasing operating cash flow.

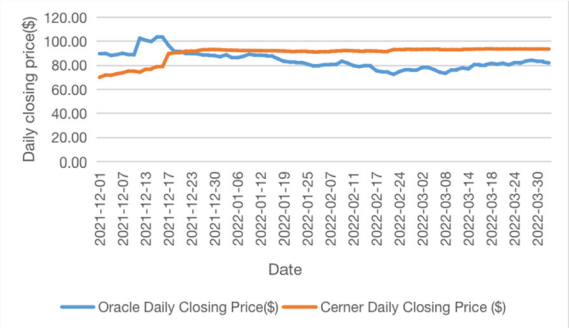

Figure 5. The comparison of daily closing price between Oracle and Cerner

There are some reasons that we suppose this merger will success finally. The first reason is Capacity augmentation causing they are both the leaders in their fields respectively. The second reason is diversification, In the medical IT industry, Cerner is undoubtedly the leading enterprise in the industry worldwide. Because Cerner is a well-known digital information system supplier, its systems are often used in hospitals. Simultaneously, Cerner is also committed to developing the modernization, simplification and automation of electronic health records. Cerner has more than 40 years of experience in running this process. At the same time, it is also an opportunity to improve the communication efficiency between medical nurses and patients, and also an opportunity to improve the experience between nurses and patients and make it Internet-based because of the cooperation of strong businesses of the two companies.

Subsequently, it is very necessary for IT and the system industry to reduce the cost of operation and reduce the operation cost. The merger of Oracle and Cerner is a good opportunity. We can easily see that when the output increases and the assets increase, but the total cost is decreasing, the total profit of the enterprise can be maximized.

TABLE 2. THE TRANSACTION RELATED DATA

Symbol	Long/Short	Qty	Curr	Price Paid	PEG Ratio	Trailing PE	Forward PE	Percentage Return
ORCL	short	-200	USD	$75.55	2.18	22.13	14.58	3.13%
CERN	long	200	USD	$91.33	2.70	50.68	25.25	1.75%

4.5. Factors Analysis

In addition to the ratio and the company level analysis of this transaction to judge whether it will succeed in M & A, the financial market, policies, regulations and values in different places can also verify the superiority of merge arbitrage under the special background of the epidemic from the announcement of acquisition on December 20, 2021 to April 1, 2022.

Oracle and Cerner are local companies in the United States. Besides, the merger is also under the background of the United States. The financial market in the United States is more developed than that in the East, and has more advantages in market scale and capital energy. They are in the late stage of the world financial market. Therefore, it is very suitable to use merger arbitrage in their market to obtain richer returns than that in the East financial market.

In the meantime, the western financial market represented by the United States is more open. Investors in the United States can use resources and pricing power all over the world, which is very different from the eastern financial market, e.g., China's financial market subject to government policies.

Therefore, it is more advantageous to use local companies in the United States as merger arbitrage strategies, whether from the index or company level, or from the financial market and policy level. In the United States, merger is often a means of asset expansion and seeking high profits. Therefore, during the epidemic era starting in 2020, the risk of merger is greater and more uncertain. The transaction made with merger arbitrage has more adaptability and superiority.

TABLE 3. TOP 20 PERFORMERS IN S&P500 (UPDATED AT THE CLOSE OF MARKET ON DECEMBER 31, 2021)

NO.	Ticker	Industry	Total Return (2021)
1	DVN	Oil & Gas Production	196.10%
2	MRO	Oil & Gas Production	149.70%
3	MRNA	Biotechnology	143.10%
4	FTNT	Computer Communications	142.00%
5	SBNY	Regional Banks	141.50%
6	FTNT	Motor Vehicles	137.50%
7	BBWI	Retail	133.70%
8	FANG	Oil & Gas Production	127.40%
9	NVDA	Semiconductors	125.50%
10	NUE	Steel	118.40%
11	IT	Internet Software, Services	108.70%
12	EXR	Real Estate Investment Trusts	101.00%
13	ANET	Computer Communications	97.90%
14	SPG	Real Estate Investment Trusts	95.80%

15	APA	Integrated Oil	90.80%
16	EOG	Oil & Gas Production	88.70%
17	IRM	Real Estate Investment Trusts	87.80%
18	STX	Computer Peripherals	87.60%
19	CF	Chemicals	87.10%
20	COP	Oil & Gas Production	86.70%

TABLE 4. THE 20 WORST PERFORMERS IN S&P 500

NO.	Ticker	Industry	Total Return (2021)
1	LVS	Cons.Discret	-36.18%
2	IPGP	Technology	-29.01%
3	LW	Cons.Staples	-28.00%
4	VTRS	Health Care	-26.81%
5	MKTX	Financials	-26.42%
6	GPN	Technology	-25.36%
7	INCY	Health Care	-24.75%
8	WYNN	Cons.Discret	-24.12%
9	VRTX	Health Care	-23.97%
10	FMC	Materials	-22.10%
11	VFC	Cons.Discret	-20.77%
12	CTXS	Technology	-19.90%
13	CLX	Cons.Staples	-18.25%
14	PNW	Utilities	-16.96%
15	QCOM	Technology	-16.88%
16	TTWO	Comm.Svcs	-16.43%
17	ATVI	Comm.Svcs	-16.31%
18	MKC	Cons.Staples	-15.87%
19	BF/B	Cons.Staples	-14.78%
20	FIS	Technology	-14.45%

5.MOMENTUM STRATEGY

5.1. Literature Review

The term momentum is derived from physics and refers to the product of an object's mass and its velocity. The financial world has introduced this concept into the analysis of stock investment, which is that the return of a stock is like an object that is constantly in motion and has a tendency to continue its original direction of motion. In other words, stocks with high yields will continue their original movement in the future, maintaining a high yield, while stocks with low yields will maintain a low yield in the future. Jegadeesh and Titman used a "buy the past winners, sell the past losers" portfolio, using data from the New York Stock Exchange and the American Stock Exchange from 1965-1989 as a sample, and eventually achieved an average annual compound excess return of 12.01% [8]. Due to investors' cognitive biases, incomplete information symmetry and limited arbitrage, the market price response is not efficient and there is under-reaction and over-reaction. This is the explanation for the sizable returns of the strategy. Shefrin points out that it can be concluded from the empirical results that apparent underreactions occur in the short run and overreactions occur in the long run, thus arguing against the idea of stochastic nature of under and overreactions in efficient markets [6]. Foltice and Langer find that the strategy can indeed work for individual investors with initial investment amounts of at least $5,000 [3].

TABLE 5. WINNERS' PERFORMANCE

NO.	Ticker	Price Paid	Sell Price	Share	Profit	Total Return
19	CF	67.47	107.05	74	2923.16	58.26%
2	MRO	17.74	25.22	282	2098.23	41.76%
15	APA	29.42	41.07	170	1969.95	39.20%
10	NUE	111.86	152.8	45	1819.97	36.20%
16	EOG	78.22	98.15	64	1263.97	25.08%
1	DVN	48.27	60.03	104	1208.15	23.96%
20	COP	81.03	97.98	62	1035.91	20.52%
17	IRM	46.68	55.53	107	937.94	18.56%
8	FANG	121.35	135.11	41	556.96	10.94%
12	EXR	208.51	210.69	24	42.28	0.65%
4	FTNT	324.71	328.07	15	41.74	0.63%
11	IT	293.69	288.79	17	-93.42	-2.07%
13	ANET	131.54	127.16	38	-176.49	-3.73%
7	BBWI	58.42	47.69	86	-928.35	-18.77%
9	NVDA	274	219.17	18	-1010.55	-20.41%
14	SPG	160.88	126.78	31	-1069.80	-21.60%
5	SBNY	353.24	270.16	14	-1185.97	-23.92%
18	STX	114.42	84.52	44	-1316.59	-26.53%
3	MRNA	233.7	160	21	-1586.81	-31.94%
6	F	23.85	15.28	210	-1806.65	-36.33%

5.2. Trade Design

The momentum investment strategy of "buying past winners and selling past losers" can yield good returns. In this study, we define the 20 best and worst performing companies in the S&P 500 in 2021 as "winners" and "losers", respectively. Afterwards, we continue to hold the 20 best performing stocks and short the 20 worst performing stocks from January 10 through April 12, 2022. In order to make the results informative for individual investors, the number of shares purchased per share is as close to the cost of $5,000 as possible. After the market closes on April 12, we calculate the return of

this investment strategy. The formula for calculating the rate of return is as follows:

$$Return = \frac{P_1 - P_0}{P_0} \quad (1)$$

where P_1 is the Price change since the stock was purchased and P_0 is original purchase price.

TABLE 6. LOSERS' PERFORMANCE

NO.	Ticker	Price Paid	Cover Price	Share	Profit	Total Return
4	VTRS	15.01	10.7	333	1435.71	95.34%
2	IPGP	164.34	100.01	30	1957.22	45.23%
11	VFC	71.04	55.3	70	1107.83	36.23%
1	LVS	36.43	35.04	137	190.78	31.27%
15	QCOM	179.68	135.36	28	1233.30	30.23%
5	MKTX	380.81	280.84	13	1312.60	28.88%
8	WYNN	82.17	71.29	61	662.04	25.41%
13	CLX	179.7	147.75	28	888.98	23.34%
20	FIS	116.37	101.92	43	620.86	21.01%
3	LW	68.54	65.96	73	188.21	18.35%
6	GPN	147.01	136.21	34	367.32	14.15%
19	BF-B	65.8	68.44	76	-200.61	11.19%
16	TTWO	142.99	140.53	35	86.02	8.71%
12	CTXS	97.22	101.14	51	-201.60	6.25%
7	INCY	74.66	80.95	67	-421.24	4.97%
14	PNW	70.65	78.21	71	-535.03	3.45%
18	MKC	94.62	102.09	53	-394.74	2.67%
17	ATVI	63.11	79.48	79	-1296.94	-10.09%
10	FMC	107.4	136.58	47	-1358.47	-17.86%
9	VRTX	223.96	281.09	22	-1275.45	-21.04%

5.3. Results and Analysis

According to the Table. V and VI, the strategy returned a total of 9.07% for the period January 10 to April 12, 2022. In the same time period, the strategy had significantly higher returns compared to the S&P 500 (-5.73% return).

6.LIMITATION AND FUTURE PROSPECTS

While the study attempts to compare the returns of market neutral, merger arbitrage, and momentum strategies with the S&P 500 in the context of the current investment environment, it is still limited by the investigation methodology. First, this study selects one merger arbitrage transaction to represent the overall strategy returns, which is subjective. This is mainly due to the fact that merger can involve many details, e.g., the competition for control between different companies. Secondly, we run simulated trades on StockTrack, though the simulation platform is as close as possible to the real data. However, especially for institutional investors, the money invested by the institution itself becomes part of the momentum, which may make the obtained return different from the real stock market operation for the momentum strategy.

It is hoped that further researchers will be able to use statistical models to enable better generalization of transaction design so that it can be expected to be able to make comparisons in terms of making investment decisions. For further research it is expected to increase the research period and change the object of research.

7.CONCLUSION

In summary, this paper investigates whether the hedging strategy will be affected by external factors within a specific period, resulting in abnormal performance or not. The goal of different hedging strategies is to control risks. According to the analysis, it is not difficult to find that even the Russian Ukrainian war, which is regarded as a great change, has not had a great impact. As long as the market does not collapse and the invested companies do not undergo earth shaking changes, hedging strategies can basically achieve the effect that investors want to control risks to a certain extent. However, we have to admit that in the case of investment failure, e.g., the wrong choice of long and short, the strategy may aggravate the loss. Therefore, the premise for the success of the strategy is still the correct cognition of the invested stocks. Similar to horse racing, the strategy of using inferior horses to compare with superior horses is very good, but the premise is to distinguish between superior and inferior horses. In the future, it is hoped to use more hedging strategies to carry out various hedging trades and obtain stable returns. Overall, these results offer a guideline for the feasibility of portfolio investment and prove that hedging strategy is effective in portfolio investment.

REFERENCES

[1] B. Dharshan, P. Balasubramanian, and Lakshmi Yermal, "Momentum Strategy for Making Abnormal Return: Evidence from Power and Telecom Sector." 2017 IEEE International

Conference on Computational Intelligence and Computing Research (ICCIC). IEEE, 2017.

[2] D. Capocci, "Neutrality of market neutral funds." Global Finance Journal vol. 17(2), 2006, pp. 309-333.

[3] F. Bryan, and T. Langer, "Profitable momentum trading strategies for individual investors," Financial Markets and Portfolio Management vol. 29(2), 2015, pp. 85-113.

[4] G. A. Pai, and T. Michel. "Differential evolution based optimization of risk budgeted equity market neutral portfolios," 2012 IEEE Congress on Evolutionary Computation. IEEE, 2012.

[5] H. Min, T. Chi, and G. Zhang, "The Development Status of Hedge Funds in the Era of Big Data and Suggestions for Regulatory Strategies." Business Economics vol.1, 2022, 1.

[6] H. Shefrin, and Meir Statman, "Behavioral portfolio theory," Journal of financial and quantitative analysis vol. 35(2), 2000, pp. 127-151.

[7] J. Tuan, et al. "How's the Merger Arbitrage Strategy in China?." 2007 International Conference on Management Science and Engineering. IEEE, 2007.

[8] N. Jegadeesh, and S. Titman, "Returns to buying winners and selling losers: Implications for stock market efficiency." The Journal of finance vol. 48(1), 1993, pp. 65-91.

[9] R. Ma, Y. Zhang, and H. Li, "Traders' behavioral coupling and market phase transition," Physica A: Statistical Mechanics and its Applications vol. 486, 2017, pp. 618-627.

[10] V. Agarwal, and N. Y. Naik, "Risks and portfolio decisions involving hedge funds." The Review of Financial Studies vol. 17(1), 2004, pp. 63-98.

[11] X. Feng, "The difference between qualitative and quantitative research and its combination." Journal of Jiangsu Administrative College vol. 2, 2017, pp. 68-74.

[12] Y. Liang, C. Zhang, and L. Zhang, "Merger Arbitrage's Performance in Different Regions After Covid-19," Korea vol. 48(2), 2021, pp. 0-497.